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HALF-YEARLY ABSTRACT

OF THE

MEDICAL SCIENCES.

JANUARY—JUNE.

1850.

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THE

HALF-YEARLY ABSTRACT

OF THE

MEDICAL SCIENCES:

BEING

A PRACTICAL AND ANALYTICAL DIGEST OF THE CONTENTS OF THE PRINCIPAL BRITISH AND CONTINENTAL MEDICAL WORKS PUBLISHED IN THE PRECEDING SIX MONTHS.

TOGETHER WITH

A SERIES OF CRITICAL REPORTS ON THE PROGRESS OF MEDICINE AND THE COLLATERAL SCIENCES DURING THE SAME PERIOD.

EDITED BY

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LATE PHYSICIAN TO THE SUFFOLK GENERAL HOSPITAL.

Apparatu nobis opus est, et rebus exquisitis undique et collectis, arcessitis, comportatis.
CICERO.

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JANUARY—JUNE 1850.

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NOTICE TO CORRESPONDENTS.

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The Editor is compelled to remind his American correspondents, that no parcels are taken in, unless the entire charge be paid upon them.

NOTICE TO SUBSCRIBERS.

We have to apologize to our readers for the absence of a Report on Surgery in the present volume. The omission is caused by domestic affliction in the family of the gentleman to whom the department of Surgery is deputed; but it will be remedied in the next appearance of our Journal. In the mean time we trust our readers will consider the space well occupied by the republication of Mr. Paget's admirable Lectures.

LIST OF BRITISH AND FOREIGN PERIODICALS REFERRED TO IN THE "HALF-YEARLY ABSTRACT."

BRITISH.

British and Foreign Medico-Chirurgical Review.
Medico-Chirurgical Transactions.
Edinburgh Medical and Surgical Journal.
London and Edinburgh Monthly Journal.
London Journal of Medicine.
Journal of Psychological Medicine.
Dublin Quarterly Journal of the Medical Sciences.
Lancet.
Medical Gazette.
Provincial Medical Journal.
Medical Times.
Dublin Medical Press.
Bell's Pharmaceutical Journal.
Guy's Hospital Reports.
Chemical Gazette.

AMERICAN.

American Journal of the Medical Sciences.
Philadelphia Medical Examiner.
New York Journal of Medicine.
Boston Medical and Surgical Journal.
Southern Medical and Surgical Journal.
British American Journ. of Med. Science.
American Journal of Insanity.

FRENCH.

Annales de Chirurgie.
,, *d'Hygiène.*
,, *de Chimie et de Pharmacie.*
,, *des Maladies de la Peau.*
,, *Thérapeutique.*
Archives Générales de Médecine.
Bulletin des Académies.
Encyclographie Médicale.
,, *des Sciences Médicales.*
Journal des Connaissances Médico-Chirurgicales.
Gazette des Hôpitaux.
,, *Médicale.*
Journal de Chirurgie de M. Malgaigne.
Revue Médicale.
Journal de Chimie et de Pharmacie.

GERMAN.

Schmidt's Jahrbücher.
Zeitschrift für de Gesammte Medicin.
Muller's Archiv für Anatomie, &c.
Liebig's Annalen der Chemie und Pharmacie.
Canstatt's Jahresbericht.
Buchner's Repertorium.
Haller's Archives für Physiolog. und Patholog. Chemie.
Casper's Wochenschrift.
Poggendorf's Annalen.

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HALF-YEARLY ABSTRACT

OF

THE MEDICAL SCIENCES,

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PART I.

PRACTICAL MEDICINE, PATHOLOGY, & THERAPEUTICS.

SECT. I.—GENERAL PATHOLOGY.

Art. 1.—*On the Analogies of Gout and Rheumatism.* By Dr. Garrod.

(*Medical Times*, p. 206, 1850.)

Dr. Garrod recently read a paper before the Medico-Chirurgical Society, of which the following is an abstract. He commenced by observing that many physicians consider gout and rheumatism as diseases so closely allied as to be merely varieties of the same; others, as differing essentially from each other; while a third set believe that, although well-marked attacks of acute gout differ widely from those of acute rheumatism, yet that the two diseases may, as it were, imperceptibly merge into each other, or that, in a given case, it may be impossible to diagnose between them. The object of his paper was to ascertain which of these different views was correct. Dr. Garrod first pointed out the differential diagnosis. Gout is a disease of advanced age; rheumatism, of youth. Gout is more common among men; rheumatism affects both sexes alike. Gout, at first at least, attacks the plethoric, and those who live high; rheumatism generally the debilitated from any causes. Gout is frequently hereditary; rheumatism, if at all so, incomparably less so than gout. The exciting causes also differ. Gout is induced by high living, by certain indigestible food, or by local injury, in those strongly predisposed; cold is the principal exciting cause of rheumatism. The rich are more subject to gout, the poor to rheumatism. Gout frequently presents premonitory symptoms, affecting the digestive organs, which is not the

case in rheumatism. Gout attacks the small joints, rheumatism the larger. In gout, one joint, generally, only is affected; in rheumatism, many. In gout of long standing, the large joints may be attacked, and also more than one; sometimes, again, in rheumatism, the smaller joints are involved. In both diseases the affection of the joints is accompanied by pain, redness, and swelling; but in gout the pain is generally more severe, and the redness and swelling greater than in rheumatism. In gout we have œdema and subsequent desquamation, which do not occur in rheumatism. The fever in gout is proportioned to the local inflammation; but it greatly exceeds it in rheumatism, and there is frequently profuse sweating of an acid character. Metastasis rarely occurs in acute gout; and, when it does, the brain or stomach suffers, the heart seldom or never; in rheumatism, the heart is frequently inflamed, and the secondary affection becomes the most important. Chronic rheumatism is more frequent than chronic gout; the latter is frequently accompanied by the secretion of a milky fluid, which constitutes chalk-stones or tophaceous deposits. Their composition is peculiar, consisting almost entirely of urate of soda, and sometimes phosphate and carbonate of lime. In the fluid state, the needle-like crystals of the urate of soda can be readily detected under the microscope. They are met with on the joints of the hands and feet, which they distort and even dislocate, also in and around the sheaths of tendons, and even in the cancellous structure of the heads of the bones. (Specimens, one weighing two ounces when fresh, were exhibited.) Colchicum possesses an almost magic power in relieving the pain in gout, but is not attended with such marked benefit in the acute form of rheumatism.

There is, however, a class of cases in which, even with the utmost care, the diagnosis cannot always be made. These are called rheumatic gout, and it would seem either that the patient suffered from both diseases at once, or that the two merged into one. Dr. Garrod considers it a matter of great interest to ascertain the true nature of these cases, and to find out whether or not cases of true gout and those of rheumatism may not present similar, and almost identical symptoms, and yet in their real nature be quite distinct. In a paper read before the Medico-Chirurgical Society, Dr. Garrod proved the existence of uric acid in the blood; in the healthy fluid traces of it only could be found, but in pure gout it was greatly increased, so that from 1·000 grains of serum it could be crystallized and weighed. It could also be procured in the form of urate of soda. This is not the case in acute rheumatism, as in that disease no more uric acid is found than in the healthy fluid. This, then, forms a marked difference between the two diseases. Uric acid, in Dr. Garrod's experiments, was abundant in the blood in cases presenting symptoms of true gout, deficient in those of well-marked rheumatism. This he used lately as a test of the two diseases. A labourer being admitted into the hospital with a complaint in one hand, which had been previously treated as rheumatism, but presenting characters of gout, as Dr. Garrod supposed, he directed a small quantity of blood to be drawn, and discovered uric acid abundantly in it. The man afterwards said he had had a similar attack in the toes, and that he could at any time

bring on an attack by drinking beer freely. The plan for detecting uric acid in the blood, detailed in the paper read before the Medico-Chirurgical Society being very difficult, Dr. Garrod recommends the following as being more simple:—He takes a small quantity of blood, say from half an ounce to one ounce, in a wide tube or small glass, and allows it to remain for some hours to separate into clot and serum. The serum is then decanted, and ʒss to ʒi put on a watch-glass, then acidulated with ♏v of acetic acid, and a fibre of hemp from a piece of linen or tow introduced. In about forty-eight hours, when the serum has become solid from evaporation, if uric acid be present, the fibre will be covered with its crystals in the form of rhombs; an idea of the amount of uric acid present may be obtained from the number of crystals. (A drawing of the fibre covered with the crystals was exhibited). That these crystals are uric acid can be proved by adding a little water, when, by care, the fibre can be removed with a small pair of forceps, with the crystals adhering to it. Nitric acid and ammonia will at once determine their nature, by the production of the murexide or purpurate of ammonia. Dr. Garrod then mentioned, as an indication of gout, the presence of chalk-deposits in the ear, a sign he has often observed. Sir C. Scudamore gives the tophaceous deposits as being only 10 per cent., but Dr. Garrod has met with them in the ear much more frequently, so much so as in chronic cases to form a valuable sign of diagnosis. He has himself often diagnosed the disease from this mark alone, and found his opinion confirmed afterwards by the discovery of uric acid in the blood. In many chronic cases of gout, the condition of the urine will aid the diagnosis, as when there are tophaceous deposits, the kidneys appear to have lost the power of excreting uric acid, so that the urine is at all times free from lithic deposits. When the chalk stones are forming very freely, he has often found that not 1-100th of a grain of uric acid was eliminated in the urine in the twenty-four hours. At the same time the urine may present an acid reaction. (See Report.)

Art. 2.—*On the Value of Lemon-juice in Rheumatism.* By Dr. Owen Rees.

(*Edinburgh Monthly Journal*, August 1849.)

Dr. Rees first called attention to this mode of treating rheumatism in a paper published in one of the weekly periodicals; he has since put forth a pamphlet, in which he has narrated eight cases illustrative of the practice.

The form of rheumatic disease in which the greatest benefit is derived, is acute rheumatism and rheumatic gout. In pure gout, with high inflammatory symptoms, more advantage has been obtained than in the chronic forms of the disease.

In doses of half an ounce to an ounce thrice daily, the lemon-juice appears to exert a marked sedative effect on the circulation; in one case, the pulse, which was 120, and full, was after one day's treatment reduced to 75, and rendered at the same time smaller; in another

case, the pulse, which was 110 when the lemon-juice was first given, was in two days reduced to 100, and in four days to 74. If we can rely on results obtained in one experiment, this action is manifested also in the healthy body. A clinical clerk took one ounce of the juice three times a day for three days, and carefully noted his pulse, which was naturally full, and 75 in the minute. After five doses the pulse became much weaker and more compressible, and numbered 70 in the minute; conditions accompanied by a feeling of general depression. On the third day the pulse became as low as 66, and was very small and compressible. The urine was always acid, and also natural in quantity till the third day, when it increased somewhat; the specific gravity was then 1·017, and there was a deficiency of lithic acid.

In the cases of rheumatism related by Dr. Rees, the urine was never rendered alkaline by the use of the lemon-juice; and in one case, in which the urine was alkaline before treatment, it became acid after the juice had been employed. We think it premature to speculate on the *modus operandi* of the drug, until its utility shall have been confirmed by more extended experience, and before we are in possession of more accurate knowledge as to its physiological action, more especially in reference to its effects on the urine, and the quantity of solids contained in that secretion.

[Of the advantages of this method, we can speak from personal experience; and it has been confirmed by other observers, as will appear from the subsequent article.]

Art. 3.—*On Lemon-juice in the Treatment of Rheumatism.* By Dr. Golding Bird.—[Since the announcement of the value of lemon-juice in rheumatic affections by Dr. Rees (mentioned above), a paper, illustrating the practice, was presented to the Medical Society of London by Mr. Middleton, upon which Dr. Golding Bird remarked as follows:—]

Now, in rheumatism, how were we to get rid of this morbid matter in the blood? Opium would remove it to some extent; colchicum would remove it. But it was taking a more common-sense view of the subject to employ some remedy which would eliminate the morbific matter from the circulation at once, by carrying it off by the urine. How, then, were we to effect this? Why, in acute rheumatism, by the administration of cream of tartar, citrate of potash, lemon-juice, or carbonate of soda. There was little difference between the action of these neutral salts; but lemon-juice, which was a super-citrate of potash, was more quickly absorbed into the blood, and consequently more active in effecting a cure. He had, however, in his own practice, been in the habit of employing the acetate of potash in these cases. This salt, with a mixture of sugar, water, and essence of lemon, acted with marvellous rapidity. In addition to this, given every four hours, he administered five grains of the soap pill, with opium, night and morning; for this not only relieved pain, but prevented the other remedy being carried off by the bowels. These, with the vapour-bath, constituted his treatment of rheumatism, and the result had been

always successful. Soda and lemon-juice equally produced an alkaline condition of the blood, but he preferred the acetate of potash, as it was not liable to be neutralised by the presence of acid in the stomach. In respect to the treatment of ague, he never began at once with an anti-periodic. He always disgorged the liver by the employment of mild mercurials, and then some quinine. He mentioned one case, however, in which the quinine failed; he then gave the acetate of potash, and the case was cured. By these remedies we immediately altered the character of the blood, and cured the disease—a much more practical and philosophical mode of proceeding than that of treating disease according to name.

Medical Gazette, June 15, 1849, p. 1044.

ART. 4.—*On the Treatment of Ague by a Single Dose of Quinine.* By Dr. C. PFEUFER, of Heidelberg.—Dr. Pfeufer states he has had much opportunity of treating this disease, and was formerly in the habit of prescribing from fifteen to twenty grains, in divided doses, in the intervals of the paroxysms. Latterly, he had given five-grain doses, until from forty to sixty grains were taken, and with great success. The number of patients having greatly increased during the bivouacs consequent upon the revolutionary disturbances, the expense of so much quinine was found a serious consideration; and he determined to try, whether by a different mode of administration less might not suffice, and certainly, if the results he has arrived at are confirmed by others, he will have conferred no ordinary boon upon the distributors of charitable medical relief. He finds, indeed, not only that the expense may be vastly diminished, but the cure expedited and rendered more certain, by administering a *single ten-grain dose* (made into four pills, with ext. of millefolium), on a day free of fever. This dose is well borne, none of the inconveniencies which result from the long-continued use of small doses, or the tinnitus, giddiness, &c., produced by very large ones, presenting themselves. The subsequent attack is weaker, and its successors still more so, the convalescent remaining in the hospital from four to eight days. A tabular view of the particulars of thirty-four cases so treated is given.

Henle and Pfeufer's Zeitschrift, and *Brit. and For. Rev.*, April 1850.

ART. 5.—*Treatment of Petechial Typhus.*—[In those cases of typhus attended with petechiæ and other forms of passive hemorrhage, Dr. Jones Lamprey has found yeast, combined with camphor and ether, of great use. He says:]

I cannot speak too highly of the stimulating and antiseptic properties of this mixture. I have seen it remove the dark, livid hue of the skin in this form of fever within a few hours; and, as another proof of its antiseptic powers, I have found that, on administering it in cases of dysentery attended with great fetor of the dejecta, it speedily removed all odour, and, at the same time, rather counteracted the frequency of the discharges from the bowels. The following is the formula I used:

℞ Cerevisiæ fermenti, ℥x,
Camphoræ, ʒss,
Ætheris nitrici, ʒiv. Misce.

An ounce to be taken every hour, or every second or third hour.

Dublin Quarterly Journal, August 1849.

Art. 6.—*Treatment of Scarlatinal Dropsy.* By Dr. Miller.

(*Pathology of the Kidney in Scarlatina*, pp. 73—80.)

[We extract the following remarks from a work on the 'Pathology of the Kidney in Scarlatina,' recently published, and an analysis of which will be found in our 'Report on Practical Medicine' in the present Volume.]

Whether nephritis succeeding scarlatina be a specific affection, or only a casual sequence of scarlatina, is a question of vital importance as regards treatment. . . . . The general indications, in the early stage of the acute affection, are to relieve the oppressed organ, and to lessen or obviate the great tendency to secondary inflammation.

In robust children, or infants who have not suffered severely from the secondary actions, eruption and throat affection, in those in whom the nervous system has not been materially involved, as shown by adynamia, small local bleeding by cupping or leeches are well borne, and produce a decided beneficial effect. The tension is removed, the perspiration returns, and the urinary secretion is partially restored, and at this time is frequently tinged with blood.

Second bloodlettings are rarely borne well, and are frequently followed by symptoms of exhaustion, or irregular action of the heart, syncope, and orthopnœa.

During the acute stage, cerebral symptoms, as stupor or convulsions, may be met with leeches to the temples or mastoid processes.

The thoracic complications appear less amenable to either local or general depletion than the head affections.

The frequency with which general or local bloodletting is followed by active hæmaturia, seems to show that by its use the kidney is often placed more completely under the influence of the scarlatinal poison. When this occurs, spontaneous hemorrhage relieves the dropsical symptoms, and such cases generally do well, though, from the proneness to asthenia, it is necessary to support the powers of life.

In all cases in which convalescence is protracted, and the vital powers much reduced, bleeding of any kind is inadmissible.

In the acute, and especially subacute attacks of the disease, warm baths, with or without depletion, are of the greatest service. Mustard poultices to the loins, epigastrium, and præcordia relieve pain and promote the renal secretion. In stupor or general convulsions, in the early stage, cold applications after depletion are serviceable. When collapse is present, and the insensibility profound, blisters to the nucha, with purgatives containing ammonia, and hot and stimulating applications to the extremities, are the proper treatment.

Equal in importance with vascular depletion is the regular use of purgatives. Of these, the neutral sulphates of magnesia and potash,

or compound jalap powder, may be given. They tend to keep up regular discharges from the bowels, and promote the secretion of urine. Direct diuretics are doubtful remedies in this form of dropsy.

The rapid changes of structure occurring during the progress of secondary inflammation, in the lungs and serous membranes, seem to call for the use of mercurials. Experience shows that they are scarcely admissible; the antiplastic property of calomel is shown by early salivation, proneness to sloughing, and frequent recurrence of hæmaturia.

Chronic hæmaturia and prolonged albuminuria are successfully treated by small doses of sulphuric acid, or citric acid and bitartrate of potass.

To promote the regular function of the kidney, long after albuminuria has ceased to be a symptom, small doses of iodide of potassium, or of the acetate of potass, in a bitter infusion, will be found serviceable. The patient should also wear flannel next the skin in all seasons.

In all subsequent ailments, the prior affection of the kidney should not be lost sight of.

SECT. II.—DISEASES OF THE NERVOUS SYSTEM.

Art. 7.—*On the Relations between Epilepsy and Puerperal Convulsions.* By Dr. Tyler Smith.

(*Lancet*, Jan. 5, 1850.)

Obstetric authors, when treating of puerperal convulsion, very commonly speak of it as puerperal epilepsy, or they divide puerperal convulsions into the hysterical, apoplectic, and epileptic varieties. The application of the terms epilepsy and epileptic to the convulsion of the puerperal state, shows that these maladies have been thought related to, or closely resembling, each other; and I believe, from my own experience, many persons believe in the existence of some actual connexion between them, and that epileptics are more prone than other women to puerperal attacks. It is this supposed connexion that I wish to examine in the present memoir.

Dr. Robert Lee, in his learned and comprehensive 'Lectures on Midwifery,' observes:—"Those women are most predisposed to the disease (puerperal convulsions) who have had hysteria or epilepsy in early life, who have suffered from injuries of the head, or who have had violent attacks of fever, with severe affection of the brain."

Drs. Hardy and M'Clintock, in their excellent 'Practical Observations on Midwifery,' express a different opinion. They say:—"It does not appear that females who are subject to epileptic fits are more liable, on that account, to attacks of puerperal convulsions. On the contrary, it would seem that they enjoy an exemption, and that even the epileptic attacks occur with less frequency, and with unmitigated severity, during pregnancy. This certainly was the case in three or

four cases of pregnant epileptic females who came under our notice." I believe I am right in referring this passage to Dr. M'Clintock, and I shall hereafter have the pleasure of quoting his cases, with the notes of which he has kindly supplied me.

In his essay 'On the Theory of Convulsive Diseases in Adults,' Dr. Marshall Hall observes, respecting puerperal convulsion:—"There are many and most important questions to be solved in regard to this and many other forms of convulsion. Does it lead to subsequent attacks of epilepsy? Do previous attacks of epilepsy predispose to puerperal convulsion? In this latter is there sphagiasmus, laryngismus, or odaxismus? What relation is there between puerperal convulsion and puerperal mania; and between convulsion, or epilepsy, and mania or insanity, and paralysis in general?" Thus the relations between epilepsy and convulsions are involved in considerable obscurity, and I do not know that any collection of cases has ever been made to determine the point upon which such a difference of opinion exists.

The two diseases, epilepsy and puerperal convulsion, are so alike in their general features, that any one reasoning *à priori* would be apt to say that epileptics must necessarily be prone to the convulsions of the puerperal state, particularly when the excited condition in which the entire nervous system is brought by gestation and parturition is considered. But, upon reflection, it would become evident, that were this the case, few married epileptics could survive the repeated shocks of the puerperal seizures during the era of childbearing. There are, too, certain points of difference between epilepsy and puerperal convulsion, both in the attacks themselves and in their antecedents and results, which, upon examination, go far to establish the distinctness of the two diseases.

Epilepsy is generally a chronic, puerperal convulsion always an acute, disease. Epilepsy is generally preceded by the characteristic aura; this is never present in puerperal convulsion. Puerperal convulsion is generally preceded by œdema of the extremities, a thing rarely observed in epilepsy. Epilepsy, when long-continued, often leads to idiocy or weakness of intellect, with occasional paroxysms of insanity. Puerperal convulsion, when it affects the intellect, produces acute mania. The fits in puerperal convulsion are much more severe, and asphyxia is more nearly approached. The fits are many in number, following each other in rapid succession, and there generally is insensibility in the intervals; while in epilepsy the disease recurs by fits of one or two at a time, often at long intervals, with the speedy recovery of consciousness after the subsidence of the convulsion. Puerperal convulsion is a disease of days, or even hours! Epilepsy is a disease of years! It is seldom that epilepsy terminates fatally until the nervous system of the patient has been worn out by repeated seizures, while in the puerperal disorder the first attack may kill. Epilepsy is connected with the ordinary functions of the body, occurring at the most varying times, and from the most varying causes, while puerperal convulsion belongs to an extraordinary function, of limited duration. And after asking the question—Is epilepsy followed by puerperal convulsion? another question is suggested—Are the

subjects of puerperal convulsion predisposed to attacks of epilepsy? If we examine into actual cases we shall find the facts to be, that the existence of epilepsy is by no means necessarily followed by puerperal convulsion on the occurrence of gestation and parturition; and it would be difficult to prove that there is, in epileptics, even a greater predisposition than usual to the puerperal attack. In epilepsy, too, the exciting cause is generally eccentric, as, for instance, some irritation of the stomach, bowels, ovaria, &c. The circulating mass is not vitiated as far as its examination has yet gone. In puerperal attacks there are unmistakeable indications of toxæmia, blood-poisoning, or centric irritation of the spinal marrow, the organ upon which all convulsive actions depend. The treatment required in the two diseases is very dissimilar; in the one, the time for treatment is in the intervals between the fits; in the other, it is in the fits themselves. We should as seldom bleed in epilepsy as we should omit to do so in puerperal convulsion.

[In a further communication the author substantiates the above views by numerous cases.]

ART. 8.—*Case of Remarkable Disorder of the Speech, with Clinical Remarks.* By MARTIN DUNCAN, M.D., Physician to the Colchester Hospital.

(*Prov. Med. and Surg. Journal,* Nov. 14, 1849.)

A female, æt. 26, of robust health prior to her present illness, suddenly fell senseless. She was not convulsed; her face was flushed, and on her recovery she suffered from severe frontal headache. In the course of a day or two, the headache still persisting, she had another fit, lost her consciousness as before, and was not convulsed, but on recovering found that her speech was affected in a peculiar manner. A third fit of like character enhanced the last-mentioned symptom, and she then came under Dr. Duncan's care.

March 25, 1849.—Her general appearance is good; she is upright and stout; has not, nor has she had, any skin disease; countenance depressed and rather anxious; her lips are pale, and she has the aspect of slight general anæmia; she complains of constant intense frontal headache, more acute on the left than on the right side; of dizziness, and of a sensation of overpowering debility; her headache prevents her from sleeping, and is increased by the horizontal posture; she has neither tenderness of scalp nor facial paralysis; the tongue is protruded, retracted, and moved in every direction with the greatest facility, but whenever she attempts to utter a syllable, however simple, its tip is forcibly directed against the fore-part of the palate, is retained there but for an instant, and as rapidly returns; her language is, therefore, a succession of "d's" and vowels. "Yes, sir," is rendered "ded, dud." "Pain in my head, sir," is made into "did, did, did, ded, dud;" one word following readily, and not too rapidly, after the other. "Hospital" is "dod, did, dud," in her method of pronunciation; and any polysyllable is a jumble of d's and vowels. She can pronounce neither gutturals nor sibilants. The word "why," which requires the use of the lips only, she can enunciate tolerably well, but it is fre-

quently called "wid;" indeed there is a tendency on her part to end all syllables by a d or t. She tries to pronounce correctly, and cries bitterly after her unsuccessful attempts. She has neither startings, nor paralysis of any of the muscles of the limbs or trunk; her senses are intact: she has never suffered from globus hystericus, or from spinal tenderness; nor can any structural changes be distinguished about the tongue, jaws, or neck; she has neither leucorrhœa nor pain in the side; heart and lungs healthy; urine scanty and highly lithic; appetite none; bowels constipated; tongue flabby and foul; no thirst; no pain after eating; pulse 96, full and excitable. Ordered low diet. Blister to left temple.

℞ Pil. hydrarg., gr. v, omni nocte. Haust. sennæ bis.

26th.—Better; headache less; bowels moved; articulation the same; pulse 96. Pergat.

27th.—Headache nearly gone; articulation worse, and as she is loud-voiced and loquacious, can be heard—"did, dod, dud, did," and so on—all over the ward.

30th.—Headache has left her, the appetite is returning, the bowels are well open, the urine is no longer loaded with lithates, she is paler than she was when she was admitted, and suffers from slight nervous palpitation. Middle diet.

℞ Ferri sulph., gr. ij,
Ammon. carb., gr. v,
Mist. gent. co., ℥i, ter die.

April 7th.—During the past week her general appearance has improved, her appetite is still not over-good, she no longer complains of headache, but her speech is no better.

℞ Quinæ sulph., gr. ij,
Inf. rosæ, ℥i, ter die.

11th.—Is better in every respect, her speech alone excepted; bowels slightly constipated; has excited herself a good deal on account of her not being able to make herself understood by her friends, and is slightly hysterical.

℞ Pil. hydrarg., gr. iij,
Ext. col. co., gr. v, ft. pil., ij, hâc nocte sumendæ.

℞ Tinct. assafœtid., ℥ss,
Tinct. valerian. co., ℥ss,
Ferri sulph., gr. ij,
Mist. camph., ℥i, ter die.

May 8th.—No improvement since the last report; articulation the same; is stronger, and has more colour.

℞ Strych., gr. $\frac{1}{10}$,
Sp. vin., ℥i,
Mist. camph., ℥i, ter die.

12th.—Articulation decidedly improved; she can occasionally pronounce a sibilant sound.

℞ Strych., gr. $\frac{1}{8}$,
Sp. vin., ℥ij,
Mist. camph., ℥i, ter die.

14th.—Speech much improved; she can say "yes, sir, why, and could," much better, but after awhile returns to the "did, did." Pergat.

17th.—Improved greatly; catamenial flux more profuse; appetite good; spirits excellent; still some impediment in her speech. Pergat.

22d.—Speaks fluently, continuously, and without the least impediment. Omit med. She is now in good health, and has perfect speech.

Remarks.—Dr. Duncan observes, that in this case there evidently was no aphonia, the chordæ vocales accomplished their functions in a perfect manner, as did also the muscles of the oral sphincter. The tongue was the offending member, that delicate approximation of its tip to the fore-part of the palate, which is requisite for the production of sibilant sounds, no longer existed; a violent, sudden, and ill-directed effort, propelled the tongue in the proper direction, but the want of the power of adaptation prevented the production of the wished-for sound. Words beginning with a hard c, or k, as could, cork, kiss, which require the back part of the tongue to be impinged for an instant against the corresponding part of the palate, could not be pronounced; she had not power, whilst speaking, to elevate the back part of the tongue; on the contrary, the above-mentioned words were rendered "dud, dod, did," the top of the tongue being employed, yet when not speaking she could move the tongue in all directions. Speaking in a whisper was accompanied by the above-mentioned odd ill adaptation of the muscular effort.

In order to have perfect voice and perfect enunciation, we require a perfect co-adaptation and co-ordination of function of the muscles of expiration—of the chordæ vocales—muscles of the soft palate—muscles of the tongue, and of those muscles of the face which have to do with the oral opening.

In this case the functions of all the structures were perfect, with the exception of those of the muscles of the tongue; there was a want of the power which controls and directs the muscular efforts of the tongue during the act of speaking; yet all was well when the tongue was to be propelled or retracted, without speech being attempted.

Now, the tongue is protruded by the combined action of the genio-hyo-glossi; its top is propelled against the fore-part of the palate by the same muscles, assisted in a certain degree by the linguales; it is retracted from its elongated condition by some of the fibres of the genio-hyo-glossus of each side, by the stylo-glossi, and when the os hyoides is fixed, by the linguales. When the tongue is altogether within the cavity of the mouth, the genio-hyo-glossi have nothing to do with retractation; this is left to the stylo-glossi, assisted occasionally by the linguales. The ninth nerves supply the genio-hyo-glossi and linguales muscles; the stylo-glossi are supplied by branches of the glosso-pharyngeal nerves.

The peculiarities of this case were excess of action of the propelling muscles, and a want of power in the retractor muscles of the tongue; most likely the first condition was an effect of the second,—paralysis

of one set, and necessary (for their antagonistic force was lost) increased action of the other set of muscles. But this was only the case during speech; there were no evidences of paralysis of any of the muscles of the tongue at any other time; on the contrary, paralysis of the stylo-glossi can only be the result of lesion, either at the origin or during the course, of the glosso-pharyngeal nerves. Can we imagine such a paralysis or such a lesion to exist at one time and not at another?—not to exist during ordinary attempts at exertion, and to exist when the action required was more or less automatic and co-existent with a combination of several functions. Can paralysis of a muscle exist during an effort of speech, and not at any other time, or during any other occupation? It did in this case, and I believe the following to be the correct explanation:—A certain amount of nervous energy is required for the production of the usual muscular efforts of propulsion, retractation, and rotation of the tip of the tongue; also for the impinging the back part of the organ against the palate; but a much greater amount is required to regulate the delicate movements employed during the act of speech. A nerve injured to a certain extent will produce one series of phenomena, but has not, or cannot, transmit, as the case may be, influence enough to produce a more complex and exacting series.

To produce a muscular effort, a certain amount of grey globular nerve matter is necessary to originate, and a perfect system of nerve tubes to conduct, the requisite nervous force, the more complete the adaptation of the originating with the conducting nervous structures, the more complete will be the powers of the muscle to which they bear relation. Every collection of nerve fibres has a certain definite number or quantity of the globular nervous element in relation with it, and the loss of any portion of this last will render the nervous influence of a certain number of fibres weaker, they will have less nervous force to conduct; they may be able to stimulate a muscle to certain exertions, but not to others requiring more nervous energy.

The branches of the glosso-pharyngeal nerves which supplied the stylo-glossi muscles in this case, were able to stimulate them to certain but not to special and more exacting efforts, on account of a loss of the proper quantity of grey matter usually existing at their roots or points of origin. How came this loss? The patient had three fits after suffering from some considerable constitutional disturbance; the first fit resembled what is termed fugitive apoplexy, the second and third resembled the first in character, but were more severe, and left behind them that lesion of the brain which prevented the glosso-pharyngeal nerves from influencing the stylo-glossi in a proper and sufficient manner. The after symptoms were not sufficiently severe to lead one to believe that a clot ever existed. I feel inclined to refer the fits and the slight structural change to one of these local congestions, which are by no means unfrequent in other organs besides the brain in women whose catamenia are not as they should be, and who are more or less anæmic. Sufficient injury could be done by the long-continued pressure of dilated capillaries upon the nervous substance within their meshes, to account for the loss of the usual and sufficient power.

I was led to believe from the commencement of the case that it was not of an inflammatory kind, and that some localized congestion alone existed. Purgatives relieved the most distressing of the head symptoms; and the tonics which were subsequently administered, although they increased the general tone of her health, yet had no influence upon the affection of the speech. Strychnia was then administered, and she soon felt the beneficial effect of it; the dose was increased, and she rapidly regained the controlling power over her tongue. She suffered from no startings whilst she was taking the strychnia, which in her case, as I believe in all others, acted upon that part of the brain which had suffered more or less structural change.

Art. 9.—*Hints for the Relief of the Paralytic.*

By Edmund Boult, Esq., f.r.c.s.

(*Medical Gazette*, and *Dublin Medical Press*, April 10.)

[Mr. Boult considers that much of the physical distress suffered by paralytic patients might be obviated by avoiding undue pressure, not only upon the paralysed limbs, but of the limbs themselves upon contiguous parts. This idea was furnished to him by a patient who was the subject of hemiplegia, and of whom he gives the following account.]

After losing sight of him for some months, I met him again, looking very much better in health and strength. His aspect was more healthy, his body more upright, and his locomotive powers decidedly greater than they had been. On my congratulating him on this improvement, he thankfully admitted the fact, and attributed it entirely to some mechanical contrivances which he had himself invented, and applied to his own relief. He afterwards favoured me with a memorandum on the subject; and, as I think it probable that the same appliances may be found beneficial in other cases, I am induced (at my friend's desire, indeed), to place an abstract of his communication before the profession, hoping that the plan he has found so useful may receive a more extensive trial. He says: "It is now nearly thirteen years since I was attacked with paralysis. After being under medical treatment for about a fortnight, I was so far recovered as to be able to be carried into the sitting-room. Gradually my general health has been much restored, but I have ever since remained a cripple. From the effects of the attack, my right arm was so tightly pressed against my chest that I could not pass a towel between them, unless I was in the recumbent posture. My right hand was fixed, and turned inwards. My right leg was also much enfeebled, and failed especially at the ankle: this limb also had a decided tendency to turn inwards. As regards my own sensations, I should compare the effect on my limbs to have been as if a heated iron had been passed down one side of a bundle of elastic membranes or tendons, of which a portion was scorched and curled inwards, and then became shorter, whilst the remainder had continued intact. I soon perceived the necessity of taking the weight of the paralysed arm (which in certain positions was truly distressing) off the hip. This I effected by means of a strap of gum-elastic, which was fixed to a button on the left or sound side,

passing over the shoulder and across the back to the right hand. This contrivance succeeded to a certain degree. After the lapse of several years, I stumbled on a pamphlet in which the effect of cushions in curing distortions was mentioned. I immediately tried the experiment by stuffing (while in bed) a pillow between my paralysed arm and chest. The effect was instantaneous. I felt as if a stream of blood were pouring in under the armpit. My voice, also, of which certain tones were affected by the pressure of the limb upon the chest, was instantaneously relieved, and the result altogether was so extraordinary, that my feelings of gratitude to the Almighty overflowed in tears. I further experimented by placing a small pillow between my thighs: the effect of this was to obviate, in a great degree, the tendency of the limb to turn inwards. I next endeavoured to arrange my cushions in such a manner as would enable me to receive the same advantage by day which I now enjoyed only by night; and after considerable trouble, and many futile experiments, I managed to *fix them upon the paralysed limbs*. The effect was successful beyond my expectations. The cushion for the arm I made about ten inches in length by nine in breadth, with straps and buttons for attaching it to the limb. It was buttoned on the inside of the arm, so that the upper part should serve as a support, and prevent any undue pressure upon the chest; while the lower end, of suitable thickness, was held in its place by the band of the elbow-joint. By a continued use of this cushion the arm has been supported, and the external muscles of the shoulder have gradually and partially resumed their original conditions, and my whole trunk is considerably straighter. The cushion for the thigh is made of similar materials, and is about eight inches square. It has two gum-elastic straps passing from opposite transverse corners. The upper strap is made fast to the button of my drawers, in front, while the lower one passes round and behind the thigh, and is attached to a loop on the drawers, about four inches from the button to which the other strap is made fast. The cushion thus *loosely* attached fills up the space occasioned by the shrinking of the muscles at the upper and inner part of the thigh. After twelve years it is hopeless to expect a perfect recovery, but the improvement in the powers of my paralysed limbs, since adopting these appliances, in July last (for it was not until then that the mode of attaching the cushions occurred to me), is so great, that I can stand and converse for a considerable time, without pain or distress, which I had not previously been able to do since my first attack. My experience leads me to the conclusions: 1st, that the effects of paralysis may be materially alleviated, by taking care that no undue pressure shall be exerted on or by the limbs or contiguous organs; 2d, that great relief may be obtained by means of cushions applied to the inside of the paralysed limbs; 3d, that it is essential that they should be placed *as high as possible*, as it will probably be found that the higher they are, the more effectual they will be; 4th, that it is extremely important to keep the paralysed limbs as nearly as possible in their natural position, both by night and by day; and 5th, that the mode of treatment which I have found so effectual in my own case, should be adopted as soon as may be, so that the antagonising muscles may be called into action as little as possible, and that the

impaired muscular apparatus of the limb may be brought into something like regular use again, before it accommodates itself to these new conditions in which it is placed."

Art. 10.—*On Affections of the Facial Nerve.*
By Dr. Marshall Hall.

Facial paralysis appears to me to be of three kinds:

1. The first is limited to the exterior branches of the facial nerve.

2. The second has its origin within the cranium, and usually affects the portio mollis, as well as the portio dura, adding deafness to the facial paralysis.

3. The third is, as yet I believe, unrecognised, and consists in the *extension* of the disease along the facial nerve, or its neurilemma, into the cavity of the cranium, affecting the membranes, or the cerebrum itself; it is not necessarily combined with deafness.

In all these cases there may be the combination of spasm with the paralytic affection. In the last there may be even convulsive or epileptic affection.

It is obvious, from these observations, that facial paralysis is not always so free from danger as we should imagine, from the description given of it by Sir Charles Bell and other writers.

I proceed to treat of each of these forms of facial paralysis in its turn.

1. *Of Peripheral Affection of the Facial Nerve.*—The most common case of facial paralysis is that which is the effect of exposure to a current of wind, at an open window, or in the open air when the wind is bleak.

This exposure induces a peculiar condition of the nerve. It may, by acting on the nervous matter, induce paralysis directly; as a similar influence, applied to the trifacial, induces numbness or loss of sensibility. But it may induce inflammation of the neurilemma of the nerve; and this, by its tumefaction, may so compress the nervous matter as to induce paralysis.

In this case, a singular effect is observed when the inflammation subsides. The tumefaction and consequent compression being less, the nervous matter is rather *irritated* than *compressed*, and the paralysis is replaced, in a greater or less degree, by spasmodic affection.

The case is similar to what is observed in experiments on the nerves of the frog. If one of these be isolated from the surrounding tissues, and be submitted to a galvanic current, tetanoid or spasmodic action is induced in the muscles when that influence is withdrawn. Or if the nerves be merely exposed to dry in the surrounding atmosphere, a similar spasmodic tetanoid effect takes place.

In subsiding inflammation of the neurilemma of the facial nerve, there is, in like manner, more or less of spasmodic action of the facial muscles.

The affection sometimes appears to have been transferred to the opposite side of the face; for whilst the case was paralysis, the face

was drawn to the unaffected side; but when it becomes spasm, it is drawn to the affected side.

Considerable singularity of action is also observed: the orbicularis, which was simply paralysed at first, and incapable of closure, is now distorted in its partial action on attempting to close the eye.

With this spasmodic action there is a peculiar stiffness of the muscles of the face, which were merely flaccid before.

I need scarcely observe that, in cases of tumour or suppuration, in which the facial nerve is fairly crushed or discharged, the phenomena are those of pure and perfect paralysis.

II. *Of Intra-Cranial Affection of the Facial Nerve.*—Facial paralysis of intra-cranial origin usually depends on disease of the bones, or membranes, as nodes or caries, tumours, abscess, &c.

Usually, as I have said, the portio mollis and the hearing are injured, with the portio dura and the action of the muscles of the face.

There may also be other symptoms, of the cerebral or spinal systems, arising from the influence of the disease on other tissues or other nerves; such as earache, noises, headache, and spasmodic and paralytic affections of the limbs.

In one case there was caries of the petrous portion of the corresponding temporal bone; in another there was circumscribed softening of the corresponding lateral lobe of the cerebellum: there were earache, deafness, and paralysis of the facial nerve; and the patient sank rather suddenly, the medulla oblongata doubtless becoming involved.

It is obvious that, in such cases, the symptoms may be at first simple enough, but may become complicated ulteriorly, and that our prognosis should be cautious.

Even when the cause is obviously an external one, as cold, its operation may be deeply seated; or it may, when this is not the case at first, pursue the course of the nerve, as I now proceed to explain, and issue in intra-cranial disease.

III. *Of Affection of the Facial Nerve proceeding inwards.*—Miss ——, æt. 38, was exposed in an open carriage to a "keen Scotch wind," eight years ago. For five years the case was one of simple facial paralysis of the right side. Afterwards other symptoms were superadded, as pain of the head, a little loss of memory, incapacity for attention.

The affection of the face became spasmodic, and was conjoined with occasional attacks of spasm of the right side of the neck; with these there was a distended state of the veins of the neck, which appeared of "*the size of a finger.*"

The right side of the tongue became affected, with a sense of numbness of the fingers of the right hand.

It is obvious, from this recital, that an affection, at first external in the facial nerve, had become intra-cranial, with symptoms not a little threatening serious cerebral or spinal affection.

It is a question of the utmost importance, in what degree inflammation or irritation of peripheral nerves may proceed towards the centres of the nervous systems? Such a case is detailed by M. Cruveilhier.

But these events are rare. Toothache, tic-douloureux, are scarcely

known to issue in this manner; and yet we should expect, *à priori*, that incident nerves would be more likely to become affected with continuous inflammation or functional affection than muscular nerves.

I may state, in conclusion, that—

1. If a nerve be *irritated* only, pain or spasm is induced.

2. If a nerve be compressed, &c., catalysis is the effect, and sensibility and motion are extinct.

3. Irritation may pass into the other condition, or the latter into the former; and then pain or spasm passes into paralysis, or paralysis into pain or spasm.

All these results are observed as the effects of exposure to cold on the nerves of the face.

Some cases are merely spasmodic; others are paralytic (the severer form of the disease), and present spasmodic affections during the process of *recovery*.

Of these affections, one is a less severe or more partial injury done to the nerve than the other.

Affections of the facial nerve may be of *extra*-cranial or *intra*-cranial origin; or, as I think it may, in rare cases, proceed from without inwards. The case of spasm, and especially of paralysis, having their origin in incident nerves, is scarcely understood at all; and careful observation is still required to reduce this whole subject to its just degree of certitude.

Art. 11.—*Remarkable Case of Hysteria occurring in the Hôtel-Dieu, Paris.* Reported by J. H. Weir, M.D., Philadelphia.

(*Philadelphia Examiner*, June 1849.)

The case is that of a female, 21 years of age, of medium height, and of apparently good constitution. The catamenial discharge had been early developed, and up to the age of 18 years she had never suffered from bad health. At that time, while engaged in washing the windows, she was seized with vertigo (for which she could not account), which caused her to fall from the third story of the house to the ground. This fall, according to the patient's statement, produced a fracture about the centre of the occipital bone. She remained insensible for fifteen days. Eight days after having recovered her faculties, she suddenly lost the senses of smell and sight, accompanied with a general trembling, which, having lasted for an hour and a half, left her completely paralysed, both as to motion and sensibility. The sense of taste likewise disappeared, or rather was so much perverted, that, according to the patient, everything she put into her mouth seemed like dirt. The power of mastication was preserved; but the sense of smell, as well as the other senses, were finally lost. The patient remained in this state for three or four months, when the sight and smell returned. At this time she was seized with mental alienation, which, like the other accidents, came on suddenly, with complete loss of intelligence, the only ideas which the patient manifested being confined to the desire of becoming a mother. This condition of the patient continued about a month, when the right leg

recovered almost completely its movements and some little sensibility. The arm of the same side experienced an inverse amelioration, the sensibility being much more apparent than the movement. At the same time the right side of the face became sensible, and the senses of taste and smell returned.

Two months after this, the patient, while lying in bed, was seized with a violent vertigo, followed by a renewal of the complete paralysis of the right leg. After a short time she recovered the movement of the left leg, and subsequently was enabled to move more perfectly the right one. It was not till four months after this happy change that she began to walk about. The left arm executed some few movements but remained insensible, as did the whole of the corresponding side of the body. This improvement lasted upwards of a month, when suddenly the right arm and leg were seized, first with contraction, and finally with entire paralysis, which lasted about four months; at the same time her madness returned, lasted four months, when all these bad symptoms disappeared; and the girl was able to return home during the winter of 1839. She then enjoyed perfect health for some months, when she again lost her intellectual faculties. By the patient, this relapse was attributed to agitation, resulting from an attempt made to violate her person. Her prominent idea consisted in a desire to commit suicide. She was taken to Salpêtrière, which she left during the carnival of 1840, entirely cured. Entering the convent of St. Michel, she found herself so well at the end of eight months, that she again undertook the duties of a domestic. In this situation she remained for two months, when, after a slight dispute, she was attacked with severe vertigo, followed by loss of the use of the right extremities. In this state she entered the Hôtel-Dieu, January 1, 1841, when the following symptoms presented themselves :—Decubitus dorsalis, respiration frequent and difficult, great anxiety of countenance. Divergent strabismus of the right eye, of the cause of which the patient is entirely ignorant. The left buccal commissure is drawn outwards, while the right has lost all power of motion. Being questioned as to the seat of pain, the patient answers with difficulty, and indicates with the left hand the præcordial region and head. Neither the ear nor the stethoscope reveal anything abnormal in the sounds of the heart, except that the pulsations are frequent and precipitate. As to the pain in the head, the patient shows the place where she asserts to have received the fracture three years ago. The pain in the præcordial region is increased upon pressure. The patient vomits everything taken into the stomach, even the Seltzer water. She appears to retain her intelligence. The whole of the right side of the body is deprived both of movement and of sensibility, and the sides of the face participate in this double paralysis, after the following manner :—*on the left*, no sensibility; *on the right*, complete loss of motion. The bowels are free, there is no heat of skin: and, notwithstanding the incessant vomiting, the desire for food is not wanting. Ordered the application of two cauteries at the back of the neck, leeches over the præcordial region, diet simple.

Jan. 2d.—The patient remains in the same state. The pain in the præcordial region is rather augmented, yet the most careful examination

reveals nothing as to its cause. Some pain in the left arm, cold sweat on the face. No involuntary movements of the left side.

3d.—No change in the condition of the patient. The leeching over the præcordial region was repeated. Pills of valerian were ordered, in conjunction with the warm bath, and an enema, containing four grains of assafœtida. In the evening of this day, there was a wonderful change for the better. There was a diminution of the pain in the præcordial region; a return of the sensibility of the right side, with some power of motion in the right arm. The patient answers, without much difficulty, the questions addressed to her.

This change for the better lasted two days, when, on the evening of January 5th, the resident physician, in making his visit to the ward, found the patient completely unconscious, without giving the slightest signs of life; the eyes thrown up, and sensibility entirely abolished.

6th.—This morning the patient remains in the same state. She opens her mouth from time to time, to vomit a few mouthfuls of bile; bowels costive; ordered pills composed of valerian, castor, and assafœtida; purgative enema; diet.

7th.—This morning the patient is gay and lively; answers all questions, and is able to move both upper and lower extremities; appetite good; pulse natural; vomiting still continues, and the patient complains very much of the cauteries. The patient continued to get better up to January 16th.

16th.—The patient still complains of the cauteries. The catamenia have appeared, after having been preceded by pains in the lumbar and pelvic regions.

17th.—The patient seems to be perfectly well. The catamenial flow, which were very abundant during the night, have much diminished. This evening at 8 o'clock, she was found by M. Guenau de Mussy in her bed, confined in the strait-jacket. In her violent movements she succeeded twice in taking it off, and he had great difficulty in re-applying it, although assisted by the nurse, matron, and one of the servants. The patient would at one time scream with the utmost violence, and then sink into a state of stupor, pronouncing now and then some incoherent words, with a convulsive trembling of the lips, like one intoxicated. The pulse was frequent and agitated, and the body was covered over with an abundant sweat. The catamenia were entirely suppressed. Ordered twenty leeches to the vulva.

18th.—Some agitation continues, with anxiety of countenance, and involuntary movements of the body. Respiration frequent; the pain in the præcordial region has returned; delirium constant, during which the patient is continually asking for her white horse to go into the country. Sensibility lost, or nearly so, over the whole body. Ordered venesection ℥xij, warm bath, and an enema of assafœtida.

19th.—Less anxiousness and agitation; pulse less frequent; continuation of the delirium; her ideas being fixed on the same subject. When questioned sharply, the patient seems to wake out of a sound sleep; looks at those around her with an astonished air; assures us she is not sick, and that she desires to return home immediately. The same treatment was continued, with the addition of an opiate at night.

Since the 19th, the patient has improved rapidly; the sensibility

has returned; her ideas are under the control of reason, and she appears happy and cheerful; answers all questions, and has a good appetite.

Feb. 1st.—The patient has entirely recovered; she leaves the hospital to-day.

One month afterward she entered the hospital as a domestic, but finding the duties too severe, she has gone into service. Her health continues to be good.

SECT. III.—DISEASES OF THE RESPIRATORY SYSTEM.

Art. 12.—*On Gangrene of the Lungs.* By Dr. Stokes.

(*Dublin Quarterly Journal*, Feb. 1850.)

Dr. Stokes, of Dublin, enumerates the following forms of this unmanageable disease:—

1. A gangrenous eschar rapidly produced, from causes which, under ordinary circumstances, would cause simple pneumonia or pleuritis.
2. Gangrene of the lung occurring as a consequence of diffuse or erysipelatous inflammation.
3. Arising from long exposure of the surface to cold.
4. Occurring in the consolidation of the lung, observed in bad cases of typhus fever.
5. Induced by contused injuries of the chest.
6. Repeated distinct attacks of acute gangrenous disease, with severe symptoms of irritation and high fever. The attacks, with the exception of the first, not having any apparent exciting cause, and continuing to occur for a great length of time.
7. Chronic gangrenous cavity, with great diminution of volume.
8. Recent sphacelus of one lung supervening on a chronic gangrene of the opposite lung.
9. The result of pressure on the nutrient vessels and nerves of the lung, by aneurismal or cancerous tumours.

Errors in diagnosis are likely to occur if all cases of cough, with fetid breath and expectoration are esteemed examples of gangrene. Dr. Graves has shown that these symptoms may occur in chronic bronchitis.

Dr. Williams and the author have described cases of fetid abscess, with recovery, a disease which has been also observed to follow measles. A gangrenous odour of the breath was perceived in the case of a lady, treated by Dr. Stokes for slight bronchial hemorrhage—and when empyema finds vent by the lung, a similar odour is sometimes exhaled. In such cases there is no sphacelus of the tissues, and we have only putrefaction of a secreted fluid occurring after it has occupied its containing cavity.

In copious bronchial effusions, in the fluid contents of open tubercular abscesses, and, above all, in the case of empyema and pneumothorax, with pulmonary fistula, the preservation from a septic state

of the secreted matters is one of the most singular of pathological phenomena. It can only be explained by assuming that actual organic connexion is unnecessary for a certain degree of inherent vitality, or that there is a vital irradiation from surrounding parts. The organization of effused lymph, and its transformation into fat, or cancerous or bony structures, seem to favour these views.

Dr. S. once believed that gangræna-pulmonum was most frequently met with in persons addicted to the abuse of spirituous liquors; he has since witnessed many instances where it occurred in the most temperate individuals. He has never met with an example of the disease in a child. Since the publication of his work on diseases of the chest, in which several forms of gangrene of the lung were described, he has met with several cases presenting the disease under new conditions, which he describes as follows:—

I. Gangrenous eschar in typhoid pneumonia. A good example of this variety, published by Dr. Hudson, in vol. vii of the first series of the 'Dublin Journal,' is referred to.

II. Circumscribed sphacelus, in cases of diffuse inflammation.

III. Chronic gangrene, producing dexiocardia.

IV. Frequently recurring attacks of gangrenous disease of the lung.

He details interesting cases of the *second* and *third* variety. Of the *fourth* he has seen two well-marked examples; and, as much obscurity attends the diagnosis of such cases, we subjoin the author's account of their prominent symptoms:—"This form of the disease may be described as consisting in a succession of distinct attacks, with high fever and general constitutional disturbance, followed by copious expectoration, which exhales the most intense fetor, with or without blood. The breath becomes fetid, and the patient's condition, during, as it were, the paroxysm of the disease, is distressing in the highest degree. In both these cases, intervals of apparently complete recovery were observed. The pulse, which had presented all the characters of inflammatory fever, would become tranquil, the respiration quiet, the cough would almost wholly subside, and the appearance of the patient improve so much as to lead to the belief of perfect recovery; when another attack, like that which had preceded it, would set in, and run a course precisely similar to that of the last invasion of the disease. The physical phenomena in both these cases were, in the early stage of the disease, singularly obscure; and in their character and extent, quite incommensurate with the severity and danger of the disease." Thus, in the first case, after the general symptoms of gangrene were quite unequivocal, physical examination elicited nothing but a little mucous râle, and it was only after the lapse of many weeks, and after repeated attacks of the disease, that some dullness on percussion and obscure gurgling were detected, over the postero-inferior portion of the left lung. In the second case, there was, at first, evidence of a congested state of the lower lobe of the lung, but this soon gave place to a normal condition of the physical phenomena, and it was only during frequent subsequent attacks of the disease that a sonoro-mucous rattle was heard over the lower portion of the lung. The author supposes "that the portion of the organ which suffers death, must be at first very insignificant, but that the surface, which

secretes the putrid fluid, is extensive. It seems almost certain, too, "that this fluid is originally poured out in a putrid condition, and the disease is at first especially one of secretion." From his observations on this class of cases, he deduces the following practical conclusion :—"*That in any case where a sudden fetid expectoration has occurred, we are not justified in pronouncing the lungs healthy, or the patient in a safe position, because physical examination, even the most accurate, fails to detect disease.*"

The next part of Dr. Stokes's valuable paper is devoted to the description of two other forms of gangrene, viz.—the gangrene which Dr. Graves has observed to attack the lung previously hepatized, and the putrefaction of blood effused into the pulmonary tissue, which Dr. Law considers an important variety of gangrene. The author has met with no examples of these lesions in his own practice. The conclusion of the essay consists of some excellent remarks upon the disease with which gangrene of the lung may be confounded, and upon the assemblage of symptoms and physical signs, which are likely to assist in making an accurate diagnosis.

One of these is fetid abscess of the lung, which it is often difficult to distinguish from true gangrene. A sign of great value in the diagnosis Dr. Stokes considers to be—the early formation of a cavity, the evidence of pre-existing disease. These would point to fetid abscess rather than sphacelus, and the prognosis would be in a corresponding degree favorable.

There are two other examples of disease alluded to, which may be mistaken for gangrene; one of these is perforation of the pleura by empyema, and evacuation of the fluid through the lung; the other, the opening of hepatic abscess in the same direction. The diagnosis of the first of these conditions is rested by the author upon—

1. The early symptoms, which are those of pleurisy with effusion.
2. The physical signs observable before the occurrence of any fetid expectoration.
3. The coincidence of pneumo-thorax.

Dr. Stokes considers our knowledge of the second class of cases as very limited, and directs attention chiefly to three circumstances which will assist our diagnosis. These are—

1. The pre-existence of symptoms of hepatic disease.
2. The fact that though the symptoms are those of confirmed gangrenous abscess, the physical signs of such a condition are wanting.
3. The rarity of hemoptysis in these cases, as compared with ordinary gangrene of the lung.

This excellent essay concludes with the following series of deductions:

"1. That gangrene of the lung is met with under a variety of forms, differing not only in duration and violence of the symptoms, but also in their relations to various local and constitutional diseases.

"2. That in a great proportion of cases, the disease is attended with putrefactive action, engaging the necrosed portions of lung, and affecting its secretions.

"3. That we cannot explain the symptoms, in many cases of the disease, without assuming, either that a spot of mortification, so small

as to be undiscoverable by auscultation, causes severe symptoms, and is attended with increased secretion, or that the putrefactive process in many cases precedes the death of the lung.

"4. That pain of the most severe kind may attend this disease.

"5. That contact of air is not necessary for the formation of a gangrenous eschar.

"6. That hemoptysis commonly attends each access of the remittent form of the disease.

"7. Gangrene may attack a lung previously hepatized, or in a chronic tubercular condition.

"8. That the pre-existence of the signs and symptoms of pneumonia, or the early appearance of the signs of a cavity, indicate fetid abscess of the lung.

"9. That in certain cases of chronic bronchitis, the breath and expectoration may be fetid without the existence of gangrene.

"10. That the diseases with which gangrene may be complicated are divisible into general and local affections, but that its occurrence in asthenic diseases is more rare than might be expected.

"11. That it is seldom observed in typhus, but may be occasionally observed in typhoid pneumonia.

"12. That it may complicate a previously-existing disease of the lung, as pulmonary tubercle.

"13. That it may be directly induced by the pressure of a tumour on the nutrient vessels and nerves of the lung; so that, in cases of cancerous or aneurismal tumour, the patient may die, not from the original disease, but from rapid gangrene of a portion of the lung.

"14. That the disease, though formidable, is not necessarily fatal."

Art. 13.—*On the Reciprocal Influence of Pregnancy and Phthisis.* By Dr. A. Grisolle.

(*Archives Générales de Médecine*, Jan. 1850.)

[We extract the following article from the 'London Journal of Medicine,' in which it has been translated. The author observes:]

It is generally held that if a consumptive patient becomes pregnant, the pulmonary disease is retarded; but that after delivery the disease proceeds more rapidly. M. Andral, however, in his 'Clinical Medicine,' states his belief to the contrary in the first edition, but admits, in subsequent editions, that a suspension of the disease may take place. M. Louis has not determined the question satisfactorily to his own mind.

Having met with seventeen cases of pregnancy developed during phthisis, and being furnished with notes of ten others by Louis, I have thought myself in a position to elucidate, if not to solve, the question. Phthisis did not appear under the same conditions in all the cases. In twenty-four, the organic disease commenced during pregnancy, at a period more or less near its commencement, while, in three, the rational signs of tubercle already existed, and the disease did not manifest itself till a later period. In none of these was the pulmonary affection retarded; on the contrary, it made rapid progress.

It would be important to have a large number of equally well-marked cases,—but they are rare. When, indeed, we reflect on the influence which pulmonary tubercles exert on the constitution, as well as the uterine disorders which so generally supervene at an advanced period of the disease, we can understand why conception should be rare in phthisical women. In almost all the cases in which phthisis coexists with pregnancy, it is found that the latter has occurred first, and that it is in a more or less advanced period of its course that pulmonary tubercles have suddenly manifested their presence. These facts are very important, as showing that there is really no antagonism between pregnancy and phthisis; but the subsequent progress of the affection proves also, that gestation has neither modified the symptoms, nor exercised any tardative effect on the pulmonary lesion. In fact, the symptoms of tuberculization, whether local or general, are developed in the same order, and with the same regularity and constancy, in women who have become phthisical during pregnancy, as in those who have contracted the disease under ordinary circumstances. On the other hand, pregnancy has not increased the violence or frequency of certain accidental symptoms of phthisis. It might be thought, for instance, that the abdominal distension would render the dyspnœa more painful, and hemoptysis more frequent; but it is found that the bronchial hemorrhage, far from being more common, is even somewhat less frequent in the females of whom I speak than in the phthisical patients, aged from 19 to 40 years, whose cases have been analysed by M. Louis. The progress of the disease has then progressively increased in all the cases; and its total duration has been diminished rather than augmented. Thus, in all, the disease has terminated at from the eighth to the fifteenth month from the commencement of the symptoms; its mean duration has been nine and a half months, which is lower than in an equal number of non-pregnant females of a similar age. But what is still more conclusive, this average of duration is lower than that which M. Bayle, and especially MM. Louis and Andral, have laid down as the mean period for the working class.

We are hence led to conclude, that pregnancy cannot exercise that tardative power on the progress of phthisis, which is attributed to it. Instead of tending to prolong life, pregnancy hastens the progress of the organic lesion; and, indeed, we cannot understand how it should be otherwise, for the system, weakened by diarrhœa, by nocturnal sweats, and by expectoration, and incessantly undermined by hectic fever, is not in a condition to support two lives. Various accidental symptoms also, often occurring in the course of pregnancy, and increasing the sufferings of the patient, oppose a further obstacle to nutrition, and must hence favour the progress of phthisis. It is scarcely correct to say, with the physicians whose doctrines I oppose, that during pregnancy all the organic activity is concentrated on the uterus, and that this organ prevents or retards disease in all the others. It is difficult to understand how this opinion has been so generally entertained. We could easily understand it, if pregnancy, without influencing the foundation and the progress of the disease, only rendered some of its principal symptoms less evident or more

obscure; but this is by no means the case; and, whether we consider the local disturbances, and the phenomena furnished by the different methods of exploration, or study the general and sympathetic symptoms, it is impossible to discover any essentiald ifference between the phthisis of pregnant and non-pregnant women. The facts which I have analysed have been so similar and constant in their occurrence, that it is rational to consider the results furnished by them, as evidences of the correctness of my observations.

We have now to inquire whether, as is generally asserted, accouchement and the puerperal state accelerate tuberculization, and render the approach of death more speedy. I think that here, also, the exceptions have been taken as the rule. Without doubt, a latent phthisis may suddenly become active, or a well-marked case of the disease may proceed more rapidly after delivery; but the same fact is often observed in convalescence from various diseases, or on the occasion of certain organic changes or disturbances. If we see some phthisical females die a few days or a few weeks after delivery, either at the full time, or premature, it no less happens in those who, having arrived at the extreme limits of the last stage, worn out by hectic fever, by sweats, and by diarrhœa, die, as if exhausted by the last effort of nature to expel the fœtus. But, I repeat, such cases are rare. Thus, twelve females, some of whom, at the time of delivery, were in the second, and most in the third stage of phthisis, have continued to struggle, on an average, four months, against the progress of consumption; and in all, the symptoms have been those observed in ordinary cases. In three, out of ten phthisical females, who were only in the first, or at the commencement of the second stage, the progress of the disease after delivery was slow; two only manifested a notable aggravation; while five, or one half, shewed in the general symptoms, and one even in the local symptoms, a sensible amelioration, so as to be able to leave the hospital, and resume their occupations. I must, however, add, that this amelioration was not sufficient to allow a hope of cure, or of the suspension of the disease for any length of time. It then results, that delivery and the puerperal state have not that influence on the progress of phthisis which is generally attributed to them; that, most commonly, tuberculization goes on as before, till death ensues; while sometimes, when the disease is less intense, it is more or less perfectly arrested.

It may now be interesting to inquire whether phthisis, in its turn, does not modify pregnancy, and produce certain important effects on the act of labour, on the sequelæ of delivery, and on the nutrition of the fœtus. It is incontestable that phthisical females have less chance of bringing their pregnancy to a successful termination than those who are in health: but it is worthy of remark, that the former have not that tendency to abortion which we would expect. Thus, out of twenty-two females who were carefully watched, three only aborted at the fourth and sixth months; three others were prematurely delivered at the eighth month; while all the rest went to the full term. In almost two thirds of these latter, however, tuberculization had set in during the early months of gestation, and had induced extreme cachexia. In this point there is a great difference between phthisis

and acute pulmonary diseases. In 1841* I pointed out that pneumonia in pregnant females provoked abortion or premature labour in more than half the cases in which it occurred. The facts which I have since observed have confirmed these results. This difference between an acute and chronic affection is naturally explained by the great constitutional disturbance produced by the suddenness and violence of the attack of pneumonia, while phthisis is slow in its development, so that the system seems to become accustomed to it, and is not so readily affected as by the sudden invasion of an acute disease.

The females to whom I have referred, suffered very slightly from labour pains in their delivery; excepting one, who was in pain for twenty-four hours, all the rest, even primaparæ, expelled the fœtus after three or four hours of very moderate suffering. The shortness of the labours may be generally explained by the smaller size of the child, but perhaps better by the diminished resistance offered by the weakened tissues to their distension. The children were, indeed, often weak and meagre; but in more than a fourth of the cases they were strong, their tissues were firm, their forms round, and their plumpness presented a striking contrast to the phthisical appearance of the mother. There is nothing very extraordinary in the fact, that women who have suffered severely during pregnancy, and have been almost constantly harassed with vomiting, are sometimes, notwithstanding their enfeebled state, delivered of well-formed and even strong children. But when the same thing occurs in females whose constitution has not been impaired by functional disturbances, but by one of those organic lesions which are the expressions of a diathesis, and which produce a most profound alteration of the nutrive function; when we see a fœtus live, and become normally developed in a body which is in a state of decay, and whose powers are irrecoverably diminishing day by day, I confess that we have here one of those preservative acts of nature which we must admire without pretending to explain.

With the exception of a few patients who were in the last stage of phthisis, and who died a few days or weeks after delivery, the lacteal secretion was established in sufficient quantity in almost all the cases. But one or two weeks, or a month at most, had scarcely elapsed before the flow of milk was considerably diminished, and even entirely suppressed. For however short a time lactation was prolonged beyond this, it had always the effect of sensibly aggravating the phthisis. This depended not only on the expenditure of nutritive material through the milk, but also on the additional fatigues to which women are exposed during lactation. This disastrous result is the less surprising, when we sometimes see the same causes induce pulmonary phthisis in women who previously appeared healthy.

Suckling has also been very injurious to the children. The milk, being entirely serous, and deprived of nutritious matter, has soon excited copious diarrhœa; and the little patients, if not placed under the care of a nurse, have died in a few days with ramollissement of the intestinal mucous membrane. No tubercles have been found in any

* Traité de la Pneumonie, p. 480.

part of their body; and yet, how can we find circumstances more favorable to the development of these morbid products? These children, in fact, had lived in the uteri of females in the various stages of pulmonary consumption, and, after their birth, had been furnished with insufficient, and probably deleterious aliment—a double reason for the production of tubercles. Their absence, in these cases, arises from the infrequency of tubercles in the lungs before the first dentition. Those who have maintained a contrary opinion have mistaken the hepatization from a subacute pneumonia for tuberculization: but an attentive examination by the naked eye and by the microscope, have shewn me that there is nothing common to these two states. These negative results of autopsies also demonstrate that the child when born seldom or never has the material germs of the malady, or miliary granulation, but only a special organic disposition, and an aptitude for their production in the lungs at a more or less distant period.

Such are the principal results at which I have arrived. We must conclude that it is rare for conception to take place in women labouring under confirmed phthisis; while, in a pretty considerable proportion of cases, the first symptoms of pulmonary tuberculization occur during pregnancy, and especially in the first three or four months. Unfavorable hygienic conditions, mental affliction, and misery, may appear sometimes to explain the development of the organic disease; but it is certain that, in most of these cases, pregnancy was the only change in the condition of the females which could be supposed to act as a determining cause. But pregnancy has not produced the disease; it has only put the predisposition in an active state, just as any other physiological or pathological change would act. Pregnancy and phthisis, having had a nearly simultaneous origin, have proceeded without appearing to influence each other, but I have proved, from a comparison of other facts, that the phthisis was rendered rather more rapid than in the non-pregnant state. The unfavorable influence of pregnancy is also proved by the fact, that after delivery, provided always that the disease had not reached a too advanced stage, the organic disease is observed to be mitigated, or at least to remain stationary. On the other hand, pulmonary tuberculization does not modify, at least in a great majority of cases, the progress of pregnancy. This point has been already perfectly established by Desormeaux and Paul Dubois.*

Such are the principal conclusions at which I have arrived. I do not offer them as absolutely correct; for they must be supported by more extended observation. The uniform results, however, which my observations have furnished, under whatever aspect we view them, must lead us to hope that they will be confirmed by subsequent investigations.

* Dictionnaire de Médecine. Art. Grossesse, t. xvi, p. 389.

SECT. IV.—DISEASES OF THE CIRCULATORY SYSTEM.

Art. 14.—*On the Prognosis and Treatment of Organic Diseases of the Heart.* By C. J. B. Williams, M.D., F.R.S.

(*London Journal of Medicine*, April 1850.)

[Although there is no organ whose diseased conditions are more accurately ascertained than those of the heart, the same certainly does not exist with regard to their prognosis. Cases are frequently met with, offering such an amount of disturbance as to give rise to serious apprehension; but we yet, to our surprise, find the patient surviving for years, and even enjoying a fair proportion of health. On the other hand, suddenly fatal results may follow apparently trifling structural change. To throw light on such apparent anomalies is the object of Dr. Williams's paper. He commences as follows:]

It is then evident, that the pronounced character of the signs is no measure of the severity of the disease of the heart; the *prognosis* is to be determined by other circumstances. My experience leads me to point out the following as the most significant; and I shall afterwards show that they are equally important in reference to treatment. They may be conveniently grouped under the following heads:

1. Circumstances relating to the heart itself.
2. Circumstances relating to the state of the blood, and its general circulation.

A structural disease of the heart may be considered serious in proportion as it impairs the power of the organ to carry on the circulation. This is to be judged of both by the signs of the action of the heart itself, and by the condition of the circulation at large. So long as the natural sounds of the heart are distinct, with their proper characteristics, no matter how loud the accompanying sounds, the heart is doing its work, and there is no ground for present alarm. If, on the contrary, they are indistinct, or too faint, or superseded (not merely marked) by abnormal murmurs, then, whether there be loud murmurs or not, irregular action or palpitation or not—whether the heart's action be strong or weak, it may be inferred that the heart's action is seriously impaired, and the case must be considered dangerous.

In illustration of this, the author narrates two cases, in one of which a harsh bruit had alarmed another practitioner; but he (Dr. W.) judged that it did not indicate a great amount of danger, inasmuch as the natural double sound was not superseded. This lady has remained perfectly well for six years, the bruit, however, still persisting.

He continues to observe that instances of noisy regurgitation through the mitral valves are still more common. He says: "I have many patients on my books who have a systolic murmur beneath the left breast. In some of these cases the patients complain less of their heart than of their breath or their digestion; in others, nervous palpitation or pain is a troublesome symptom, and aggravates the fears of the patient; but none of these symptoms are adequately propor-

tioned to the cardiac lesion, and they may come and go while this is constant. So long as the natural sounds of the heart are distinct, and the impulse does not far exceed its natural limits, although the murmurs be loud and the symptoms distressing, we need not despair of amendment."

In all cases, however, in which the existence of valvular lesion is proved by the persistence of a murmur, the prognosis must take into account not only the present amount of the lesion, but what it is likely to become; whether it be stationary or progressive; and whether, although it does not seriously affect the work of the heart, it may not be so increasing as eventually to do so. To determine this point, we have to consider the history of the case, and watch its progress for some time. Thus, if symptoms of disordered action of the heart have only recently ensued, then it is possible that the disease, though moderate now, may be on the increase; and even in a case of slight lesion, a favorable prognosis cannot be pronounced until further observation determines that there is no tendency to increase. But if the history give no evidence of a recent affection of the heart, and examination, at stated intervals, discover no remarkable variations in the physical signs, it may be inferred that the lesion is stationary, and may be considered less formidable in proportion as the natural sounds are unaffected.

[The author next alludes to cases in which a more serious prognosis is to be formed. Observing that the danger is not in proportion to the loudness or harshness of a morbid sound, but rather to the degree in which it supersedes the natural sound, he proceeds:]

Thus when, instead of a natural first sound and impulse, there is only a soft blowing murmur, with little or no impulse, or when a murmur of any kind entirely supersedes the second sound, we have at once proof of a serious change of structure; this is commonly evinced by faintness, palpitation, with other signs of failing cardiac function. The most formidable of such cases are those in which the valves are broken by violence, by inflammatory action of fatty degeneration. In the latter cases the change has been slower; and there is evidence of general cachexia, as destructive endocarditis and fatty degeneration do not occur in healthy constitutions.

[After exhibiting the compensatory powers of Nature in the induction of hypertrophy, as a counterbalancing force to the obstructed circulation, and remarking that the balance is the more perfectly maintained in proportion as the hypertrophy is unaccompanied by dilatation or degeneration, the author next enters upon the second order of circumstances which affect the prognosis in heart disease.]

The mechanism of the heart is adapted to certain degrees of spissitude and quantity of the blood, and the vital properties of the organ are maintained by its richness and purity. Any considerable deviation from the normal state of the blood will disorder the action even of a healthy heart, and much more so one of which the structure is imperfect. Hence there are no cases more distressing than those of valvular disease, combined with anæmia, and many such are reduced to this condition by injudicious lowering treatment. But so long as the natural sounds and impulse are distinct, and there is no more complication than anæmia, even though the murmurs are loud, the

palpitation violent, and even anasarca have commenced, these cases are not hopeless. In many cases they improve under a combined sedative and sustaining regimen, with chalybeates; the murmur still remains, but its intensity diminishes with the improved state of the blood.

The same observations apply to general plethora. This increases the intensity of the symptoms of organic disease of the heart. Under such circumstances, the prognosis is unfavorable only when the proper antiphlogistic treatment cannot be practised, or is delayed too long.

But the most common of all the complications of heart disease, and the most important, is that with deteriorated *quality* of blood. Cachexia and toxæmia in all their varieties, uræmia, cholæmia, lithæmia, pyæmia, &c., constitute prominent elements in the history of cases of organic disease of the heart.

Experienced practitioners have long known, that in organic diseases of the heart, it is of the first importance to attend to the secretions of the liver and kidneys; the influence of their disturbance is doubtless in some instances through the nerves; in other cases it is mechanical, as when the stomach is distended with gas; but most commonly the medium which conveys the disturbing influence is the blood. Loaded with morbid matters, it disorders every organ, but none more than the heart; hence attacks of palpitation and other disturbance, which magnify a before quiescent into a distressing and possibly dangerous malady.

The permanent affection of the heart also reacts upon other organs, by inducing congestions; the lungs, liver, kidneys, &c., especially suffer from this; hence the subject of diseased heart suffers frequently from biliary or stomach disorders, from asthmatic or gouty ailments, depending upon imperfect elimination from the kidneys.

[These secondary disorders, if opportunely treated, are, Dr. Williams observes, quite tractable in connexion with moderate degrees of cardiac lesion, but if neglected may precipitate a fatal event. It is, therefore, of consequence to be aware of their presence, as indicated by their symptoms, and also to know the sequence in which they may be expected to arise. Such information is given by the author in the following table:]

SECONDARY EFFECTS OF ORGANIC DISEASE OF THE HEART.

On the Liver.	*Symptoms.*	*Common Results.*
Congestion . . .	Soft and variable enlargement . .	Increased secretion or deposits.
Deranged or interrupted secretion . . .	Bilious attacks, jaundice, &c.	Cholæmia, dyspepsia, &c.
Interstitial deposits .	Enlargement.	
,, ,, soft .	,, soft . .	Functional disorder, weakness.
,, ,, fatty .	,, ,, . .	Cachexia, dyspnœa, dropsy.
,, ,, hard granules .	,, irregular .	Jaundice; purpura.
,, ,, contractile .	Decreased size, rounded edges . . .	Intestinal hemorrhages; ascites, cachexia.

On the Kidneys.	*Symptoms.*	*Common Results.*
Congestion	Urine increased, then diminished, albuminous or bloody; lumbar pain	Temporary albuminuria; uræmia.
Gradually filling of tubuli with granular cells and fat	Enlargement; urine albuminous, less urea	Albuminuria, uræmia; dropsy, &c.
Contraction and atrophy	Urine less albuminous, more aqueous	Ibid.
On the Lungs.		
Congestion	Dyspnœa; cough obstructed, respiration crepitus, &c.	Pulmonary catarrh, emphysema.
Interstitial deposit	Dyspnœa; signs as above, with dullness in percussion, &c.	Hydrothorax and general dropsy.
Pulmonary apoplexy and consolidation	Increased cough and dyspnœa; expectoration viscid or bloody	
On the Arteries.		
Irregular distension	Strong pulsation; pain; jarring pulse	Deranged function of the heart.
Deposit on coats	Pulse hard, unequal	Tendency to aneurism, rupture, gangrene, atrophy.

[This important essay is continued in a subsequent number of the same journal (May). The author notices, in the first instance, the prevailing tendency to treat organic diseases of the heart indiscriminately by sedatives, and expresses his opinion that very many such diseases require a sustaining regimen, though much practical knowledge is requisite in the exhibition of tonics, as iron and quinine, their good or bad effects being regulated entirely by the circumstances under which they are given.

The general treatment of organic disease of the heart is comprised in the three following indications:]

1. To regulate and promote the moderate and efficient action of the heart itself.

2. To improve the quality, and regulate the distribution, of the blood.

3. To prevent or counteract subsequent lesions, functional and structural, of other organs.

The treatment addressed to the condition of the heart itself will vary. At early periods of organic disease, whether of valves, investments, or muscular structures, there is commonly a tendency to excitement, which in plethoric subjects may even reach inflammation, or assume some form of vicious nutrition, which will further disorganize the organ. Under these circumstances, there is no doubt of the propriety of antiphlogistic measures, proportioned to the urgency of symptoms. Local depletion and counter-irritation will generally suffice for this, the instances in which general bleeding is required being rare. * * * * *

But in many examples, particularly in nervous persons, in females, and in connexion with dyspeptic and other functional disorders, the excitement of the heart is more nervous than vascular. This is recognised by the suddenness of the paroxysm, and the concurrence of other nervous symptoms, as globus, &c.; if the person be anæmic, there will be sufficient evidence of the absence of real vascular power in the pallor and low temperature of the extremities. Under such circumstances, nervous sedatives are more appropriate than depletion, and of these the following are to be preferred in the order mentioned: hydrocyanic acid, aconite, digitalis, camphor, henbane. The sedative action of all these is increased by combination with an alkaline carbonate. In hysterical cases, the fetid gums, with ammonia, afford the most relief. . . . . Another expedient for calming the violent action of a palpitating heart is a draught of cold water. This measure will not, however, be expedient in persons predisposed to syncope.

[The above are temporary means of allaying cardiac excitability. A more permanent effect is to be attempted during the intervals by the use of tonics, a class of medicines which Dr. Williams justly observes are not sufficiently appreciated in organic affections of the heart. They, however, require to be selected with judgment, and in many cases to be combined with sedatives, and in all with such treatment as will insure a free state of the secretions. Dr. Williams next notices the treatment of cases in which diseased heart is accompanied with defective action. He observes:]

In many cases this is combined with irregularity of rythm, and irregularity of pulse; but these two states are by no means proportionate; for weak hearts sometimes show no intermission, and considerable irregularity may occur without any prominent signs of weakness. More or less irregularity of pulse is commonly observed in connexion with the following lesions:—Extensive valvular disease, especially of the mitral valve; dilatation with or without moderate hypertrophy; fatty degeneration and softening of the parietes. Advanced stages of pericarditis and adhesion of the pericardium, present a remarkable kind of inequality or intermission in the radial pulse, whilst the heart's action is regular; in fact some of the pulsations are too weak to reach the wrist, and these deficient beats are those which correspond with inspiration.

The chief remedies for defective action of the heart, are of the stimulating and sustaining kind; but this cannot be applied without discrimination. The same organic lesion which contraindicates unguarded depletion during inordinate action, is an obstacle to the free administration of stimuli during irregular and depressed action.

It often happens that we have to premise or combine with stimulants means to relieve the heart of a load which it cannot propel. A few leeches, or a blister, with derivants to the secreting organs, may thus enable the stimulant to operate with greater certainty.

[The author next considers the second indication. We pass over his remarks on conditions of over-richness of the blood, and proceed to some important observations on the combination of anæmic states of the system with organic lesions of the heart. He says:]

The poverty of the blood is often the result of injudicious depletion,

low diet, &c., in other instances the anæmic condition arises spontaneously as a consequence of rheumatism (compare Dr. O. Ferral's observations in our Report). The same happens after other acute diseases. The treatment usually proper in anæmia is required in these cases, and the heart symptoms are ultimately relieved, as the organ becomes invigorated by a supply of better blood; but here, too, we proceed with caution in giving iron and other tonics. The doses should be small, and combined with hydrocyanic acid or other sedatives, and gradually increased. The secretory organs require the aid of gentle aperients and diuretics at the same time. A good tonic in these cases is the iodide of potassium combined with the citrate of iron.

[The length of the communication has obliged us to considerably curtail the author's remarks on this subject, in order to pass on to the third indication, upon the due understanding of which our success in managing cases of diseased heart will mainly depend.]

The last indication is to prevent, or counteract, those lesions of function and structure which supervene in other organs in the progress of heart affections. The first morbid condition of organs thus suffering, is, for the most part, congestion, with disordered secretion; then follow deposits, altering the structures; lastly, ensue impaction, induration, or degeneration of the deposits, still further impairing the vitality of the structures.

In diseased heart complicated with affection of the liver, in addition to the treatment of the former, it is necessary to use mercury more freely, with reference to its cholagogue effect. A combination of blue pill, squill, and digitalis, may be given till the gums are touched, or diarrhœa or diuresis ensues. Local depletion, and counter-irritation to the hypochondrium, often do good for a time, after which, with muriatic lotions and foot-baths, and extract of dandelion with muriate of ammonia and nitre, will decidedly improve the condition of the liver. Saline purgatives are also beneficial.

The complication of kidney disease, evinced by albumen in the urine, is, in its early stage, by no means so intractable as commonly supposed. Cupping, and large blisters to the loins, with hydragogue cathartics, will often restore the secretion to a healthy state. The purgative most suited to these cases is bitartrate of potass, in doses of from half an ounce to an ounce, taken fasting. Elaterium has the disadvantage of seriously depressing the heart's action; but, when other means fail, we are constrained to resort to it: it appears to disorder least when given in doses of half a grain in a pill, with two or three grains of calomel and one drop of creosote. After the congestion of the kidneys is thus somewhat removed, they become amenable to diuretics.

The long continuance of the renal affection impoverishes the blood, and it becomes an object to counteract this by iron. Generally the remedy is not well borne, causing a diminished flow of urine, and increase in albumen. In extreme cases, the only useful treatment is by stimulants, and in addition to alcoholic stimulants the chlorate of potass may be mentioned as having a reviving effect, even in these extreme cases.

Pulmonary complications with diseased heart, in moderate degrees

and early stages, are readily reduced by cupping, blisters, calomel, and antimony. Asthmatic attacks generally depend on pulmonary congestion with bronchial spasm, and are relieved by counter-irritation, antispasmodics, and expectorants. More intense degrees of congestion may pass into pulmonary apoplexy, or hepatization, and become the most formidable and most rapidly fatal complications of diseased heart.

Disease of the larger arteries in connexion with organic lesion of the heart requires due consideration. At an early period, it is more or less inflammatory, and may require moderate antiphlogistic treatment; but there is an early tendency to deposits, degeneration and dilatation of their coats, requiring tonic and invigorating measures; of these, iodine, nitric acid, and the preparations of iron, are the most serviceable.

[This paper concludes with a repetition of some remarks by the author on the general regimen required in diseased heart, published by him in 1838. He enjoins a moderately sustaining diet, deprecating the idea that good can be derived from low diet, except in some peculiar cases. He also points out the necessity of guarding against distension of the stomach, and its irritation by indigestible substances. Active exercise is to be avoided; the cutaneous circulation is to be maintained by warm clothing and friction; and, above all things, moral and mental quietude is desirable.]

Art. 15.—*General Summary of the Signs of Valvular Lesions of the Heart.* By E. H. Parkes, M.D.

(*Medical Times*, Feb. 23, 1850.)

Dr. Parkes lays down the following rules of physical diagnosis of the lesions of the various cardiac valves:

1. *Mitral insufficiency*, presenting all its characters in perfection, gives us—

1°. A systolic murmur, having its maximum over the left apex, or just outside this, and being followed generally by a second sound.

2°. An accentuation of the pulmonary second sound—the aortic second sound weakened. The accentuation of the pulmonary second sound may not occur if there be coincident *tricuspid* insufficiency. The weakening of the aortic second sound is said to be most marked in old cases in which the size of the aorta is often notably diminished.

3°. The signs of dilated hypertrophy of the left side—sometimes those of the right side.

4°. The signs of pulmonary congestion from reflux.

5°. Thrill at the apex.

6°. A feeble, small, and unequal, but not necessarily an irregular pulse. The smallness of the pulse often contrasts with the vigour of the heart's impulse.

Such a disease, when uncomplicated, is not attended by dropsical symptoms, or by any signs derived from the general venous system.

(*a*) Of these physical signs, the last two may be eliminated without

weakening the certainty of the diagnosis; nor, without at least two others, are they of the least diagnostic value for this special lesion.

(*b*) If there be no evidence of pulmonary engorgement—that is, cough, hæmoptysis (not dependent on its other known causes), expectoration, &c., nor of dilated hypertrophy, the diagnosis of mitral insufficiency still remains sound, if, with a systolic murmur at the left apex, the pulmonary second sound be more accentuated than can be considered normal, even in those who present naturally a sharp pulmonary second sound.

(*c*) If the only sign be a systolic murmur at the left apex, this proves, in all probability, disease and alteration of the mitral valve, but perhaps not necessarily regurgitation. This statement is opposed to the usual rule laid down by writers, and especially to the opinions of Hamernjk, and is not to be considered a certain one. In fact, I have not scrupled, and shall not scruple, to speak of systolic murmur at the left apex as diagnostic of mitral insufficiency. But there are some cases on record, and in this hospital we have lately seen two, in which thickening and vegetations on a competent valve apparently produced the systolic murmur.

(*d*) Occasionally, but rarely, mitral regurgitation is unattended by any murmur, and must then be diagnosed by its other signs, if present. If not present, the disease is latent.

2. *Mitral contraction* is diagnosed with much greater difficulty. The following are the signs sometimes noted:—

1°. A diastolic murmur at the left apex.

2°. Pulmonary congestion and hæmoptysis.

3°. Second sound in pulmonary artery sharpened (unless there is also *tricuspid* insufficiency) in the aorta enfeebled.

4°. Frequently consecutive enlargement of the right heart.

5°. If there be no absolute diastolic murmur at the apex, there may be several sounds, two or three, following the systolic sound. Sometimes these may be re-duplications only of the normal second sound, but often they proceed apparently from the mitral valve itself, and are, perhaps, attributable to cleavage of the first sound, or such moiety of the first sound may be heard with a second sound.

6°. There is sometimes purring tremor at the apex. Dr. Hope thought it never occurred, but it has been recorded.

7°. The pulse, as in mitral regurgitant, is weak, unequal, and, from accompanying general dilatation of the heart, may be irregular.

A coexistent systolic murmur is very common, from accompanying mitral insufficiency. Frequently the diastolic sound is wanting; perhaps from the nature of the contraction, perhaps from the feebleness of the current of blood. The pulmonary symptoms which are present may appear referable to a co-existent mitral regurgitant disease, and it then becomes almost impossible to diagnose mitral contraction. In such a case, the flow of blood through the aorta, as judged of by the character of the aortic second sound, and the state of the pulse, may be more impeded than can easily be accounted for by the existent mitral regurgitation. Then we may suspect, and carefully examine again for, mitral contraction.

3. *Tricuspid insufficiency* may give the following signs:—1°. A systolic murmur at the right apex. 2°. Pulsation and refilling from below of the external jugulars. 3°. Signs of hypertrophy, and dilatation of the ventricle, and often of the auricle. 4°. Second sound at the right apex often lost; the cause of this deviation from the common rule in mitral insufficiency is obscure. It may depend on a lessened column of blood in the pulmonary artery.

The almost inevitable consequences of any amount of tricuspid regurgitation are impediment to the general circulation and anasarca. The systolic murmur is not always present, nor are the jugular pulsations; but if there is decided evidence of dilated hypertrophy of the right heart, and general anasarca, which cannot be referred to another cause, then the diagnosis may be made of tricuspid disease, either regurgitant, as it almost always is, or obstructive, as it is in some very rare instances. If, in such a case of dropsy, there are no signs even of dilated hypertrophy, then the general venous congestion may be owing to an exceedingly weak and dilated heart. Often the diagnosis of tricuspid insufficiency must be drawn altogether from the general symptoms.

4. *Tricuspid contraction* is so rare a disease, that its signs are not yet known. A diastolic murmur at the right apex from this cause has not, to my knowledge, been recorded. Possibly we might suspect such a lesion, if, to the signs of general dropsy, there were joined evident dilatation of the right auricle without the signs of ventricular hypertrophy, and without the murmur of tricuspid insufficiency.

5. *Obstructive Aortic Disease.*—1°. A murmur at the base, with its maximum over the valves, or just above, and carried along the aorta. If the contracted orifice be very smooth, the murmur may be wanting. 2°. Hypertrophy of the left ventricle, in a degree determined by the extent of the contraction and the general health and occupations of the individual. 3°. Aortic second sound very weak, even wanting, but not superseded by murmur. 4°. Occasional purring tremor. 5°. Pulse unaffected, till contraction be extreme, then small and rather hard, not soft and unequal.

Very nearly the same signs may be given by roughness of the lining membrane of the aorta, by dilatation or aneurism, by pressure from a tumour, or even from a tuberculous lung; only in such cases, if the valves are healthy, three circumstances will often fix the diagnosis: 1°. That the sound is at its maximum above the valves, and is hardly at all heard below them. 2°. That the aortic second sound is of good tone. 3°. That the morbid sound is carried a long way down aorta, and can often be heard better in the back than over the heart. Hamernjk, of Prague, doubts whether a murmur will arise from a roughened aorta; but this cause is usually admitted in this country, and I believe properly so.

Systolic murmurs may arise at the aortic orifice, and in the aorta in some cases, in which there is no reason to suspect organic change, viz., in anæmia, in typhoid, and probably in typhus fever, in puerperal fever, and it is said in the exanthemata. So also in cases of pressure from below, as in abdominal tumours and pregnancy; or from the

side, as in some cases of tumour not directly pressing on the aorta, inorganic murmurs will occur. It is not always easy to diagnose these from aortic disease, except in the case of anæmia. An inorganic murmur thus arising, is called by Hamernjk "diffuser ton," but the murmur is often as perfect as any arising from obstruction. It is said, that in rheumatism a murmur will occur at the aortic orifice, without endocarditis.

6. *The signs of aortic insufficiency* were given at the last lecture. I need only mention one more of little importance, viz., a lengthening of the interval between the heart's impulse and the beat at the wrist. Neither of these diseases of the aortic mouth are necessarily attended by obstruction to the general circulation.

7. *Obstruction and regurgitation at the pulmonary orifice* are very rare. The signs of such states will be analogous to similar conditions of the aortic orifice.

Such being the general summary of the physical signs, the following provisos should be borne in mind in examining cardiac affections:

1. These rules presuppose that the heart is in its natural position, has an unchanged axis, and is not to an abnormal extent covered or uncovered by lung; in fact, that there are no circumstances present which may falsify, so to speak, the elements of the problem. If such changes are present, it must be seen what amount of uncertainty they cause in the diagnosis.

2. In the matter of murmurs more especially, it should be always remembered, that to cause vibrations of valves and murmurs, a strong current of blood is necessary. If, therefore, with an extremely feeble heart, there are no murmurs, we cannot say that there is no affection of the valves with the same certainty, as if with a strong powerful heart and a good current of blood there was an equal absence of murmur. In this last case we might be all but certain there was no valvular disease, but not so in the former case. Therefore, with an extremely feeble heart, the diagnosis must be qualified. You will find it stated by a writer of authority on diseases of the heart, Dr. Blakiston, that mitral regurgitation is "sometimes, but not often," accompanied by systolic murmur at the apex. I must confess, that as far as I have myself been able to examine cases, and to consider those recorded by others, I should doubt whether this statement is not too broadly put. It appears to me, that except in cases of manifestly weak hearts, or failure of circulation from arrest of the current of blood, if the other signs of mitral regurgitation exist, the systolic murmur at the apex is never or very seldom wanting. Among the great number of instances of systolic murmur at the apex which daily present themselves, the difficulty, it appears to me, is to decide whether the murmur is to be referred to regurgitation, or to other conditions of the mitral valve, not involving insufficiency. But there is seldom any difficulty in finding the murmur in decided insufficiency.

3. When two or more cardiac diseases are combined, the signs may be slightly modified; thus, extreme mitral regurgitation, with a rather weak heart, may prevent an aortic obstructive or regurgitant murmur, by greatly diminishing the flow of blood through the orifice. Such a

condition, however, does in reality fall under the rule given above. Again, tricuspid insufficiency may prevent any increased sharpness of the pulmonary second sound in mitral insufficiency.

Art. 16.—*On Fatty Degeneration of the Heart.*

By Edward Latham Ormerod, m.b.

(*Medical Gazette*, Nov. 2, 1849.)

[The interesting series of papers, of which we now give an abstract, is occupied with the clinical history of one form of fatty degeneration of the heart, viz., that which may occur at any period of life, and which, pathologically speaking, is a true *atrophy*, in which highly organic red elements are replaced by those of a lower kind. The author does not propose to go into the whole subject of fatty degeneration, but rather to elucidate one form, which he considers has not met with much attention.

The author introduces his subject by narrating the particulars of several cases of sudden death, in which a post-mortem examination revealed the presence of the lesion in question, and which he found by microscopical examination to consist in the greater or less substitution or intermixture of fat globules for the normal muscular structure. He then exhibits it in connexion with hemorrhages and associated with valvular disease, after which he enters upon some general considerations. These our limited space compels us to omit, but we give his remarks on diagnosis and treatment at length.]

There are some points yet remaining, fitter perhaps for consideration on general grounds than by analysis. How are we to distinguish the existence of this disease during life? and how, when we have distinguished it, are we to prevent its further progress? With regard to the first question, the most extreme cases detailed may show that the diagnosis, on general or physical grounds, is almost impossible. One of them was a strong athletic man, a pattern of apparent health and strength, till within four days of his almost momentary decease; and several others had their hearts carefully examined during life, in the inquiry after cardiac disease, without anything abnormal having been noticed to arouse a suspicion of the existence of this particular disease. And, after this negative answer of the first question, it might seem useless to pursue any further the second, as to treatment. But we need not contentedly sit down and add this to our other medical problems which can only be solved by dissection, and have no interest to any one but the morbid anatomist; for though, abstractedly, we know so little about it, yet its bearing on other diseases is very important. And when its recognition becomes more general, with the more general use of the microscope, it may prove to be the key to much of cardiac pathology. Let us look at it, in conclusion, in this point of view.

We cannot, it is true, predict with certainty in any case that we shall find this lesion after death, but it is difficult for any pathological observer not to be led to suspect the existence of a disease on the

repetition of the same circumstances under which he has seen it occur previously.

In three of the cases above detailed of lingering illness, this condition of the heart has been met with in a striking degree—too striking to justify the unqualified inference that it resulted either from debility or from inaction of the heart; for, if this were so, why should not the same changes be found more frequently under similar circumstances? These patients kept about, or lay in bed, slowly sinking, and nothing that was tried did them any good. Every organ was scrutinised, every rational suggestion (in one of them at least, where time allowed) was acted on, but all to no purpose: they quietly sank and died. Could one watch another similar case during life and not suspect the existence of this lesion? Would not one be strengthened by the examination of such another case after death, in the conviction that the state of the heart, or that which caused the state of the heart, had something to do with the inability to rally from the apparent disease?

Apart from all other considerations, this form of disease is, I think, less likely to occur, under such circumstances, in private than in hospital practice. For the treatment of acute disease it is quite impossible to be better placed than as an inmate of one of our large hospitals: but during the dawn of convalescence, when little or nothing remains to be done, the contrast between private and hospital practice is very great; for hospital patients sadly miss all those kind attentions and encouragements which only friends can administer, and those only who have been sick can appreciate the comfort of. The suspicion of the existence of such a lesion should make us most assiduous, not only in the exhibition of tonics, more particularly in the form of iron, but also in the use of those mental appliances the want of which makes the spirits (may I say the heart?) flag, and allows the organs of active life to remain in a passive condition. This is common ground, on which the moralist and morbid anatomist might meet. A broken heart may not be so very incorrect an expression of the effects of intense grief after all.

Another point to be considered in connexion with this disease is the perplexed pathology of angina pectoris. The common cause of suffering and of death in this disease is perhaps correctly expressed by Dr. Latham and Dr. Heberden as spasm; but the circumstances under which this spasm occurs are so various that we can scarcely consider any one of them as a very frequent or very influential cause. This uncertainty might well be shown by collating the diverse opinions of different physicians on this subject; but it appears better to quote at length the experience of one physician who has seen occasion to follow diametrically opposite plans in different cases.

Dr. Latham says, "There have been cases in which my treatment of angina pectoris, in the intervals of the paroxysms, has chiefly turned upon reducing the nutritious and stimulant quality of the patient's diet, abridging his animal food, and denying him wine and fermented drinks altogether. There was one case, and only one, in which I was driven to draw blood more than once from the arm—an unusual and a hard necessity! There have been more cases, on the other hand, in

which the general habit of the patient has made me fearful of withdrawing support, and experience has shown me the need of supplying a well-regulated amount of stimulus in the shape of wine daily. The administration of steel in the intervals of the paroxysms has (I have convinced myself) in some instances, been instrumental to their postponement."

My own experience on this subject is so limited that I forbear to urge it: I would content myself with comparing the inferences obtained from the facts adduced in this paper with the results of treatment which Dr. Latham has summarily expressed. How closely the two divisions of fatty degeneration of the heart appear to coincide with the two practical divisions of the patients! The wine and steel are for the soft, flabby, fatty hearts; the strict regimen and depletion for those where the fatty degeneration is secondary to inflammation.

The subject is too important, and bids fair to have at least this view of it satisfactorily examined, that I should here endeavour to strain any facts in support of this explanation. It is true that fatty degeneration of the heart cannot have angina pectoris set down as one of its usual symptoms; for out of all the cases above detailed, not one, properly speaking, has presented it. But, on the other hand, it is impossible to read any collection of cases of angina pectoris without sharing in some degree Dr. Fothergill's opinion, without feeling how much further fatty degeneration goes to explain the symptoms than does any other morbid change usually found on dissection.

Art. 17.—*On the Curability of Fatty Degeneration of the Heart.* By Dr. H. Kennedy.

(*Dublin Medical Press*, Dec. 12, 1849.)

[After detailing private cases, and giving an analysis of fifty-three instances of fatty disease of the heart, the author directs attention to the above question. He thus proceeds:]

You are all aware that the latest works, including those by Hope and Latham, do not entertain the question at all; or if they do, it is only to speak of the hopelessness of remedying such a state. I cannot help stating it as my conviction, that the time has arrived when our opinions on this subject must, or rather ought to, change. The rapidly enlarging field which animal chemistry now presents, the more accurate study of the morbid anatomy of each individual organ, the foundation of statistics, and the increased powers of diagnosis possessed at the present day, would all tend to lead us in this direction. There is surely nothing in the structure of either a fatty or flabby heart which should lead us to think that the cure of either was impossible. We know there is nothing malignant about these states, and then we have the fact already adverted to—that in at least two thirds of such cases—we have no valvular disease to contend with. If any of us were called on to treat a case where the muscles of the spine or calf of the leg had, from long want of use, been atrophied, or converted into fat, will any one maintain such to be beyond the reach of art; nay,

that there would not be a certainty of our being able to effect a cure, provided only we were able to have all our directions fully carried out. Of course I am well aware of the much greater difficulties which exist in the one case than the other; but this, it will be observed, is but a difference in degree, and no one will now argue that the mere difficulty of the case is any valid reason why we should not use our best efforts to overcome it. The treatment of disease is nothing, in point of fact, but one continued series of difficulties, which it is our business, as far as we can, to conquer. And one thing is clear, the longer we consider any disease irremediable, the more distant will the prospect be of our being able to cure it.

It might be supposed from these remarks that I was now about to enter on the treatment of the forms of heart disease brought under your notice; such, however, is not my intention. This would require a separate and a lengthened essay in itself, and would, consequently, far exceed my present limits. One point, and only one, do I wish to glance at for a moment, and I do so here because it applies to a weak acting heart, whether it be due to fatty degeneration or other cause: I mean the importance of a well-directed system of exercise. This of course is not a new idea, but still I know no work in which it is at all treated of in the way in which it appears to me to deserve. Nor indeed with the ideas that have hitherto prevailed is this to be wondered at. Passive exercise is alluded to as a means of improving the general health, but anything which would have a tendency to hurry the circulation is specially spoken against. Now this is precisely the point I invite discussion on. It appears to me, that amongst the means of cure, one of the most, if not the most important, would be exercise, suited of course to the demands of each particular case. If it were a fatty or weakened muscle near the surface of the body that we were endeavouring to bring back to a healthy state, there would, I should think, be no second question about the propriety of exercise; and I can see no difference in the principle, even when the heart itself is the organ engaged. It is necessary again to repeat, that I am well aware of the difficulties which will meet us when we have so important an organ as the heart deranged. Cases I know will occur where even the very idea of exertion could not be borne; and others, again, where the instinct against exercise is so strong that it will be impossible to have our views carried out. Granting all this, it does not affect the principle which I am endeavouring to establish. Because some cases might be unsuited for a particular line of treatment, would surely be no reason for our not using it in the cases of the same disease which did appear to be adapted for it. If this were so, all medicine might be given up, for no one remedy is suited, in every instance, to a particular disease. But probably these views will be better understood by giving an example in which they have been carried out.

Case.—A lady, now æt. 67, of tall stature, came under my care in the earlier part of this year. She had resided all her life in the country, and had been what is usually thought healthy; being subject, however, to slight rheumatic pains, particularly affecting one knee. About two years ago, that is when æt. 65, she observed that her breathing was not as free as usual. At first this was very slight, and

only at intervals; by degrees, however, it became more severe and more frequent, and the dyspnœa was commonly felt in the morning. This state had continued some weeks, when one day, stooping to pick up something from the ground, she was suddenly seized with a sort of weak fit, attended with a sense of fluttering of the heart, but no pain. This obliged her at once to sit down, and remain quiet for some minutes; when, by the use of a mild stimulant, this attack passed off. Subsequently, however, to this, the fits of dyspnœa became much more urgent, and finally, one year since, she came to town for advice. At first she was under the care of an eminent gentleman, who pronounced her case to be one of nervous asthma; she then, in the earlier part of this year, came under my care. It is enough to state, that after a close examination, and watching the case for some weeks, I came to the conclusion, as in the last one detailed, that the heart was the organ at fault; that, in fact, it was a case of cardiac asthma. It should be mentioned, that for a person of her years she has not at all lost flesh as might be expected. The pulse at first was very feeble, as was also the beat of the heart. It beat 66 in the minute, and I have detected an intermission; but it is not an abiding feature of the case. There is no souffle. The pulse is remarkable in this respect, that it passes very slowly under the finger.

Acting under the impression that in this instance I had a feeble heart to contend with, this patient was advised to begin and carry out cautiously a course of exercise; and this was done most steadily. At first she was to walk slowly a little each day; then a greater distance; then more quickly; then to go up stairs two steps at a time; and in this way she has become inured to a degree of exertion which, considering her time of life, is really very considerable. Shortly after she commenced this plan, she had one very severe attack of what she describes as the weak fit. It occurred when she was walking smartly against the wind—a very common way, as you are aware, to bring on an attack of the kind. Since then she has had one or two threatenings, but no actual attack; and the last six months she has been free from even a threatening, at the same time that her breathing, she says herself, is as good as ever it was.

Notwithstanding that, in this case, appearances are now so promising, I by no means take it on me to assert that this lady is cured; nor would I even wish to give it as my positive opinion that the heart had taken on diseased action. There is quite too little yet known about cases of the sort, on both these questions, to justify anything like this.

[A discussion followed the reading of the above paper, in which few of the speakers were disposed to adopt the author's views. The risk of sudden death during exercise has been supposed by the majority to counterbalance any likely benefit.]

Art. 18.—*On the Value of Bleeding and Mercury in Pericarditis.* By Dr. Taylor.

(*Medical Gazette*, July 20, 1849.)

[The following conclusions on the therapeutic value of these two agents in pericarditis are extremely valuable, and cannot be too strongly impressed upon the minds of our readers. We need hardly say that Dr. Taylor is now justly regarded as an authority in matters connected with diseases of the heart.]

The remedies whose effects are examined are chiefly bloodletting and mercury.

I. *Bloodletting.*—The conclusions arrived at are the following:—

1. The duration of pericarditis increases in proportion as the time is longer between the commencement of the disease and the first bleeding.

2. The duration of the cases bled after the first four days is greater by one half than of those bled within the first four days from the invasion of the disease.

3. The influence of bleeding was more marked in the cases in which it was copiously and repeatedly, as well as early, practised, than in those in which blood was drawn less frequently and more sparingly.

4. Pericarditis is never extinguished at once by bleeding, however early, or however copiously practised.

5. In several cases the pericarditis was suspended for a limited time. The suspension, in every instance, was immediately consequent upon the local abstraction of blood.

6. It is probable that renal has a longer duration than rheumatic pericarditis.

7. Bloodletting must be less copious, and is more frequently inadmissible, in renal than in rheumatic pericarditis.

8. Bloodletting probably lessens the mortality, inasmuch as it lessens the duration of pericarditis; but direct proof of the reduction of mortality is not to be obtained from these cases.

9. The abstraction of blood by venesection, cupping, or leeches, almost invariably relieved the pain at once, but not permanently. There is no reason to believe that any one form of bleeding relieved pain more effectually than another.

10. Bloodletting never lessened the frequency of the pulse, except when there were signs of the inflammation having abated.

11. The tendency to syncope in some cases of pericarditis, renders it necessary to be very careful in abstracting blood by venesection.

12. Free venesection for pericarditis does not always prevent the subsequent appearance of serious inflammation in other internal organs.

II. *Mercury.*

1. The cases in which mercury was given within the first four days, had an average duration less by five days than those in which it was given later.

2. The cases in which salivation was produced within the first four days had an average duration less by two days than those in which it occurred later.

3. It is difficult to determine how much of the benefit was due to

the mercury, because all the patients who took mercury were likewise bled, and in almost every instance the two remedies were first employed on the same day.

4. The author is inclined to the conclusion, that the benefit was due in greater measure to the bleeding than to the mercury—partly because the duration of the disease was more abbreviated in those who simply began to take mercury than in those in whom salivation was produced within the first four days. The administration of mercury coincided with the bleeding, but the salivation did not, and the results are just what might be looked for upon the supposition that the benefit was due to the bleeding and not to the mercury.

5. If the production of salivation had anything like the marked influence in arresting inflammation, and in promoting the removal of its products, which it is currently believed to possess, the duration of the cases of pericarditis after salivation ought to have been much less than it really was. This is proved by a detail of the cases.

(*a.*) Salivation was not followed by any speedy abatement of pericarditis in sixteen cases.

(*b.*) Salivation was followed by pericarditis in five cases.

(*c.*) Salivation was followed by an increase in the extent and intensity of the pericarditis in three cases.

(*d.*) Friction-sound ceased two days before the mouth became sore, in two cases.

(*e.*) Salivation was followed by a speedy diminution of the friction-sound in two cases; it did not cease, however, for some days after.

(*f.*) The pericarditis ceased soon after salivation in two cases; in one of them, however, it had been declining for some days before.

(*g.*) Mercury was given, but no salivation was produced in seven cases.

(*h.*) No mercury was given, nor other treatment adopted in eight cases.

(*i.*) Cases are detailed exhibiting the occurrence of various internal inflammations during the time that salivation was proceeding. The cases comprise examples of endocarditis, pleuro-pneumonia, pneumonia, pleuritis, erysipelas, and rheumatism.

A conclusion rather adverse to the antiphlogistic powers of mercury having been drawn from the facts narrated, the author next examines the evidence upon which the contrary and more prevalent opinion is based, and infers that the evidence is not satisfactory.

Art. 19.—*On the Diagnosis of Aneurism of the Arch of the Aorta.* By Dr. O. B. Bellingham.

(*Dublin Medical Press*, Jan. 14, 1849.)

[The difficulty of the diagnosis of aneurisms of the aorta has been a frequent theme of writers, and not a little that has been written has tended to increase rather than diminish the difficulty. This the author attributes to taking too limited a view of the subject, and placing too much reliance on particular symptoms. One error he points out is that aneurism of the aorta is always accompanied by a

loud single *bruit de soufflet.* He maintains that so far from being constant in aneurism of the arch, it is never heard, and that instead of a single sound being characteristic, a double sound is the rule. He continues to observe that the symptoms of aneurism of this vessel are not the result of changes which the arterial tunics undergo, but are the result of compression, stretching, and displacement of important structures, or of disturbed functions of contiguous vital organs. After which he proceeds as follows:]

Every one familiar with the anatomy of the arch of the aorta, and with its relations to surrounding parts, will comprehend that when an aneurism forms, its diagnosis may sometimes be easy, at others difficult; and that the facility or difficulty of diagnosis will be influenced by a variety of circumstances, such as the tone of the sac, its situation and direction, the capacity of the chest, and the importance of the parts compressed, which must vary as the sac springs from the ascending transverse or descending portion of the arch, or as it arises from the anterior, the posterior, the superior, or inferior surface of the artery in this part of its course. It is obvious, likewise, that aneurism of this artery in its early stage may present quite a different train of symptoms from those of its advanced stage, and that the symptoms must vary somewhat according as the aneurism forms a tumour externally, or remains concealed within the walls of the chest. Indeed, the symptoms present such a remarkable contrast in different subjects, that the disease has been confounded with or mistaken for a variety of others. Thus, in some instances, pain was the only prominent symptom from beginning to end, and the disease was set down as chronic rheumatism or neuralgia; sometimes cough and dyspnœa were the only symptoms complained of, and the disease was referred to the lungs or bronchial tubes; sometimes difficulty of swallowing was the first circumstance which attracted the patient's attention, and he was supposed to be the subject of stricture of the œsophagus; sometimes hoarseness, loss of voice, stridulous or croupy breathing, were the most prominent symtoms, and the disease was supposed to have its seat in the larynx; at other times an unusual pulsation upon some part of the chest was the first circumstance which attracted the patient's attention: at others a profuse hæmoptysis was the first symptom which alarmed him, and led him to seek advice; while sometimes, but more rarely, no single symptom from first to last, sufficient to attract the patient's attention, was present, and his sudden death led alone to the discovery of the disease.

When an aneurism of the thoracic aorta presents itself externally as a pulsatory tumour, the diagnosis is of course generally easy; indeed, up to a comparatively recent period, this was supposed to be the only positive sign of its presence. But when the tumour neither approaches the parietes of the chest, nor compresses any important organ or part contained in this cavity, an accurate diagnosis is attended with more difficulty. In some instances the diagnosis will be facilitated by the mode of reasoning which the French term *par voie d'exclusion;* for example, if the patient exhibits one or more symptoms of thoracic aneurism, which may be common to it and to other diseases of the chest, but if we cannot refer them to any diseases of the

heart or lungs, the existence of aneurism is probable, provided the patient is a male, and his age that at which aneurism is most frequent. In other cases, the patient's previous history may throw some light upon the diagnosis; thus, if a man who had previously laboured under spontaneous aneurism in one extremity, presents any symptoms of thoracic aneurism, this ought to attract attention; while if he had been twice previously the subject of spontaneous aneurism (as occurred in one of my cases), the probability will become still stronger. Again, if a man who has received a severe injury of the chest, or a violent strain, exhibits some time afterwards signs of pressure upon the trachea, large bronchial tubes, œsophagus, or any other part contained in the thorax, the existence of aneurism is probable; while if the previous habits of the patient had been such as to predispose to disease of the central organ of the circulation, the probability will become still stronger.

Aneurism of the ascending or transverse portions of the arch of the aorta, as a general rule, is more easily diagnosed than aneurism of the descending portion of the arch, because it is almost necessarily attended by signs which are absent in the latter; this will be immediately evident when we consider the anatomical relations of the artery in these several parts of its course. For instance, if the aneurismal sac springs from the anterior surface of the ascending or transverse portions of the arch, it will soon form a pulsating tumour externally. If the sac proceeds from the superior surface of the same part of the vessel, it will point below the clavicle upon either side, or rise above the sternum, or it may cause erosion of the upper bone of the sternum, or of the second and third ribs. If the sac springs from the posterior aspect of the vessel in this part of its course, it will soon come to press upon the trachea, œsophagus, or large bronchi, or it may compress the descending cava or the right pulmonary artery and veins.

On the other hand, an aneurism seated in the descending portion of the arch of the aorta might remain undetected for a considerable period, as the sac must attain a large size before it could form a pulsating tumour externally, owing to the depth of the vessel in the thorax. An aneurism coming off from the anterior surface of the descending portion of the arch of the aorta might certainly come to press upon the left bronchus, the œsophagus, or the thoracic duct, or it might stretch or compress the par vagum nerve upon the left side; these effects, however, are much more likely to be produced by an aneurism springing from the transverse portion of the arch of the aorta. It might also compress the left lung or displace the heart, and this is more likely to occur in aneurism of the descending thoracic aorta than of any part of the arch, and the aneurism must attain a very large size before it could occasion injurious compression of the lung, or before it could displace the heart much; and other signs of its existence more pathognomonic would probably have been developed previously.

If the aneurismal sac springs from the posterior wall of the descending portion of the arch of the aorta, it cannot compress any of the important organs which are in connexion with this vessel in the other parts of its course; consequently, all the general signs which arise

from the compression, stretching ,and displacement of these organs, and which assist the diagnosis of other parts of the arch, are absent here. But an aneurism can hardly form in this situation without coming to act in some degree upon the bodies of the vertebræ, which is always attended with severe pain ; and this appears to be almost the only direct sign of aneurism of this part of the vessel, unless the sac attains such a size as to form a tumour externally. But as pain is a symptom common to many affections, as the seat of the pain is not always exactly at the seat of the lesion, and as we are obliged to rely entirely upon the patient's own statement with respect to its character and intensity, this symptom has not received all the attention from pathologists which it deserves.

With respect to the cause of the pain, pathologists are not agreed; this seems to have resulted in some measure from their seeking to refer it always to some one cause to the exclusion of others. Now, as the parts with which the aneurismal sac comes in contact are so different, as the sensibility of these parts varies so much, and as the amount of injury which they suffer from the pressure varies likewise in different cases, the cause of the pain cannot surely always be the same; and it ought to vary in degree, in character, and in intensity in different cases, which we know it does. In all the cases of aneurism which I have detailed, more or less pain was complained of by the patient; but in the last three in the list, in which the sac sprung from the descending portion of the arch of the aorta, or from the descending thoracic aorta itself, pain was by many degrees more intense and severe than in the others, and it is only reasonable to suppose that its cause was different. Now, from the close proximity of the artery here to the bodies of the vertebræ, an aneurism in this situation will soon come to act upon them, and this appears to me to be the cause of this very intense pain ; which is further characterised (as an ulceration of the cartilage of the hip and the knee-joint extending to the bones) by increasing at night, and remitting or intermitting during the day; and by being often most severe at points remote from the seat of the lesion. In cases where large nerves are compressed or stretched by an aneurism, the pain may likewise be very intense, but in this instance the explanation is easy. Under other circumstances, the pain, though it may be severe, is bearable in comparison, and has its cause evidently in the distension or pressure exercised upon the other tissues in contact with the aneurismal sac.

As an aneurismal sac then may spring from any point upon the superior or inferior, the anterior or posterior surface of the arch of the aorta; as its size may vary from that of a walnut to a melon ; as the direction which the sac takes may be upward or downward, forward or backward, inwards or outwards ; as the tumour in enlarging may make injurious pressure upon the trachea, right or left bronchus, or œsophagus ; upon the left carotid, left subclavian, or innominata ; upon the descending cava, the pulmonary artery, pulmonary veins, or thoracic duct ; as it may stretch or compress the par vagum, the phrenic or recurrent nerves ; and as it may cause erosion of the sternum, ribs, or bodies of the vertebræ, we can understand why its symptoms are so different, and why they must necessarily be as various as are the

tissues or organs, which are injuriously compressed, stretched, or otherwise injured.

In addition, we cannot be surprised that the symptoms should be much more marked and more distressing in some cases than in others, when we recollect that the progress of the disease is so much more rapid in some subjects than in others, and that the capacity of the chest of patients the subject of this disease varies so materially. For instance, if the patient's chest is narrow and contracted, the characteristic symptoms will set in sooner and have a higher degree of intensity than under opposite circumstances; yet this consideration seems to have been quite overlooked by writers on aneurism of the aorta. It is in fact in subjects whose chest is capacious and largely developed that the disease is likely to exist unsuspected, and to remain undiagnosed for a considerable time; and such, I am convinced, will be found to have been the conditions, in the majority of the cases on record, where the patient died suddenly without any suspicion of aneurism having been entertained. The occupation and habits, too, of the patient, whether he is obliged to earn his bread by manual labour or not, and whether he is temperate, or the contrary, in his habits, will have some influence upon the rapidity or slowness of the progress of the disease.

SECT. V.—DISEASES OF THE CHYLOPOIETIC SYSTEM.

ART. 20.—*Diphtheritic Inflammation of the Pharynx and Tonsils.*

By HENRY A. RAMSAY, M.D.

(*Philadelphia Medical Examiner*, June 1849.)

An attack of this affection is usually preceded by a rigor or chill of more or less intensity; but this is not the invariable mode of premonition. The author has often seen it preceded by a pain in the leg, arm, toe, finger, ear, or abdomen. With this premonitory outline, the disease assumes two distinct stages, viz., an acute and typhoid, or malignant. After the supervention of the above symptoms, the acute stage is ushered in by sore throat, dryness of the throat, some pain in the head, some suffusion of tears, with a profuse discharge from the nose; the pulse is full and rather inclined to hardness; the skin is harsh and dry; the eyes are red, the tonsils, pharynx, fauces, &c., are swollen, and covered as far as the eye can observe, with patches of a membranous character, resembling ulcerations; deglutition is attended with some degree of difficulty; pultaceous substances being swallowed with more facility than fluids; there is usually a slight cough and discharge of a tough, viscid phlegm; the tongue is covered with a dirty white coat, almost instinctively impressing one with the idea of malignancy, or obstinacy; the parotid and submaxillary glands are faintly swollen; the limbs ache, and the patient complains of weariness, of indisposition, and of a burning about the throat, with thirst.

When his vocal organs are much exercised, he craves water, but cannot swallow it with ease; his respiration is frank and open, but you can discern a nasal twang when he speaks; his appetite is perverted, and he seldom eats.

These symptoms continue for an indefinite period, not longer usually than four or five days, when the malignant stage advances, by almost irresistable and insensible gradations; the tongue assumes a dark colour; almost a *charcoal* appearance. This appearance of the tongue exists sometimes in the first stage of the disease. The patient mopes about almost lifeless; he is stupid, dull, and despondent; his perspiration is cool, sticky, and unpleasant to the smell; his pulse is feeble and languid; his bowels, in the first stage constipated, now become loose, and his discharges fetid; he has loss of appetite, deafness, pain in the ears; his limbs ache and grow stiff; his mouth gets sore and bleeds, and, to use a familiar term, it feels "nasty" to him; his throat is not offensive, nor is his deglutition more impaired than in the preceding stage. He will remain possibly in this state for ten or twelve days, when he would surely die, if no plan of treatment were adopted. The disease is not confined to any particular period of life. Young and old are alike the victims of its attack; the black population, however, are more frequently its subjects. The prognosis is generally favorable. Children die usually in the first stage; adults in the second.

In the treatment of this affection, in the first stage, we use emetics of a mild kind; they relieve the throat of that sense of suffocation which sometimes exists, from the accumulation of tough phlegm. They also appear to us to exert a good influence in assisting the modification of the secretions of the mucous membrane of the throat, and not unfrequently cast off those membranous patches observed upon the tonsils and fauces. For all practical purposes, we know of no emetic equal to the common table salt, exhibited in a warm solution; we prefer it to all others for its mildness and expeditious action. Next to this, we prefer a combination of mustard and ipecacuanha, or the latter alone. We prescribe these emetics through the whole course of the disease; and so perfectly convinced are we of their propriety, that we challenge a comparison of success in an equal number of cases with any man.

After emesis, we prescribe a dose of castor oil, or sulph. magnesia, and pepper tea, every day, or every other day, as occasion may require. As a local application to the throat internally, we use a warm solution of alum or vinegar and warm water; either has a happy effect. The nitrate of silver and kreasote, so often prescribed in diphtheritic diseases, did not succeed well in our hands. As an external remedy to the throat, we conceive the ordinary pepper poultice, or onion poultice, far superior to any other; indeed, we consider it of unequivocal advantage in every case. Scarification of the tonsils is our magnum remedium in all cases of throat disease, where the tonsils are much enlarged or swollen. As a therapeutic application, we doubt the efficacy of blisters. We have seen them the cause of immense suffering and pain. The suggestion of bloodletting we should deem detrimental, and not at all to be entertained.

The treatment of the second stage must be essentially modified in many respects. When the tongue is black, the circulation languid and dull, we know of no remedy equal to the blue pill and cayenne pepper, to restore the vital energies. We do not mention the quantity, as the judgment of the practitioner can best determine the quantity necessary in any case. In combination with this, we use a warm pediluvium every night, and sometimes during the day. We also direct the occasional use of porter or wine, if there be much prostration. Blisters in this form of the affection have a deleterious effect, and should be strongly reprobated.

Art. 21.—*Differential Diagnosis between Cancer and Hypertrophy of the Stomach.* By Dr. Bruch.

(*Zeitschrift für Rat. Medizin*, and *Medical Times*, March 9, 1850.)

The following points may be of importance towards the differential diagnosis of these conditions; but it must be understood that they refer only to pure well-marked cases, and that for the complicated or combined instances there is no general rule, nothing but the details being sufficient.

1. Hypertrophy, or the increase of the normal substance of an organ, with retention of its texture and figure, appears in the stomach as a gradual, and more or less uniform swelling of the gastric membranes. Cancer, which is always a true aftergrowth, or new structure, takes, with few exceptions, the form of a swelling, and appears as a circumscribed, prominent, often knobbed or tuberculated, aftergrowth, which destroys the normal structure of the tissues.

2. Hypertrophy, even where it is the result of a cancerous construction, is characterised by a *gradual* swelling of the membranes, having the proportion of their natural increase of thickness towards the pylorus; while, on the other hand, cancer may be situated in any possible part of the stomach, and always exhibits a partial degeneration of the membranes.

3. In hypertrophy, often only one membrane (viz., the muscular) suffers, and in its whole extent. In cancer, on the contrary, very often several membranes become transformed into one common aftergrowth.

4. Even where many membranes are hypertrophied, they are always seen as particular layers, lying over each other; while in cancer sometimes any, sometimes all, are irrecognisable.

5. The division of the muscular coat into compartments is not characteristic of cancer. On the contrary, even where it occurs in true cancer, it only signifies hypertrophy of the muscular tunic.

6. In hypertrophy the coats are, at first, in spite of their thickening, separable from each other; in cancer they are fused in the aftergrowth.

7. In general and pure hypertrophy, the stomach is always narrowed and hardened. In cancer, especially of the pylorus, there is usually considerable dilatation and thinning.

8. Hypertrophy may precede the cancerous new growth, and occurs

as a partial hypertrophy of the neighbourhood simultaneously with the cancer; or it is associated with cancer of the pylorus, as a secondary event, when constriction appears. In the latter case, the (general?) dilatation remains.

9. Chronic gastritis occurs as well in hypertrophy as in cancer; but it would appear that, in the first, it is more as a cause; in the last, as an effect.

10. In hypertrophy, a large portion, or the whole, of the mucous membrane is more frequently diseased; while in cancer, a great extent is commonly still normal.

11. The diagnosis during life is trustworthy only in those instances where appearances of constriction are present; since, in other instances, hypertrophy is scarcely accompanied by any other symptoms than those of chronic gastritis.

12. A sensible knobbed swelling, especially when sharply defined, or many knots of a tumour in the epigastrium, speaks decisively for an aftergrowth of the pylorus, and against a pure hypertrophy; while, on the contrary, a diffuse resistance and swelling of the epigastrium speaks for the latter condition, especially when the hard part corresponds to the form of the pyloric portion of the stomach. (That the swelling is impalpable, does not definitely exclude cancer.)

13. Displacement of the stomach, with sensible hardness, speaks for the great probability of an aftergrowth.

14. A limited and permanent sonorous sound on percussion, speaks for general hypertrophy (narrowed and hardened walls); a diffuse and inconstant sonorousness for cancer (dilated and thinned walls).

15. Vomiting at definite periods, especially many hours after eating, speaks very certainly for cancerous constriction. (Dilatation of the stomach without gastritis.) Continuous vomiting in the fasting state, or immediately after each ingestion, rather for hypertrophy (i. e., for narrowing of the stomach, and for chronic gastritis, which latter certainly becomes augmented in the last stages of the cancer).

16. The quality of the matter vomited depends not so much on the form of disease as on the condition of the gastric mucous membrane. Black (or "coffee-grounds") vomitings signify nothing but effusion of blood in the stomachal cavity.

17. In the case of a cancerous softening and destruction of the mucous membrane, in which elementary parts of the aftergrowth may be evacuated, the microscopic examination of the vomited matters must not be omitted.

18. A long duration of the disease, and an unbroken progressive development, speaks for hypertrophy. Cancer generally runs its course in from one to two years.

19. A sudden intermission of the vomiting, and of the other appearances of constriction, with subsequent return, accompanied by a sensible swelling, is one of the surest indications of cancer (commenced softening).

20. The absence of appetite is more frequent in hypertrophy (diffuse disease of the mucous membrane); good appetite is more usual in cancer (partial disease).

21. Pain refers either to the mechanical inconvenience of the aftergrowth, or to chronic gastritis. It is, therefore, not characteristic.

22. The constitutional effect depends on the narrowing, the chronic gastritis, or the suppuration; and on the secondary events of emaciation, pain, obstruction, &c. It is, therefore, altogether of relative import.

23. With respect to etiology, continual mechanical injuries (local influences, as in shoemakers, weavers, &c.) appear more to dispose to cancer. While spirit-drinking, gluttony, and nervous conditions (especially morbid and continuous nervous vomiting) seem to conduce to hypertrophies; acute and chronic inflammation appear of equal efficiency for both.

24. The existence of an isolated swelling once established, the diagnosis of cancer from other aftergrowths is scarcely of much practical interest. But lipoma, fibroid, or alveolar gelatinous tumours, or the benignant tumours generally, are indicated by the mildness of their phenomena, and the more frequent absence of constriction. Besides, they do not soften; and hence they lack those symptoms which depend on this change. Disseminated deposits in other organs, namely, in the liver, together with the existence of a circumscribed swelling in the stomach, of course affirm cancer.

Art. 22.—*On Insensibility from Indigestion.*

By John Hinton, m.r.c.s.

(*Medical Gazette*, Oct. 16, 1849.)

[The following cases offer nothing new; but as they are not instances of everyday occurrence, may serve to admonish the practitioner on points which, from their unfrequency, he may be apt to be negligent. We have given analogous cases in former volumes:]

Dyspepsia, among its numerous attendant symptoms, frequently classes head affections: this fact even the most casual observer cannot fail to notice. The flushing of the face and occasional headache, in healthy persons, from too great indulgence, are common enough. To the dyspeptic this symptom is among his most frequent and often most disagreeable companions; but in some cases it reaches a far higher point, often alarming the friends of the patient, and occasionally even the doctor himself. Several of these cases having rapidly fallen under my notice, my attention has been directed towards the subject, and among the most important cases which recur to my recollection are the following:—

Case i.—Mrs. E., æt. 33, the wife of an independent gentleman, had been under my care for some weeks with dyspepsia of severe type, attended with anæmia and disordered uterine functions. On the 2d of November, 1848, I had seen her, and thought her rather better, but was summoned to her about ten in the evening. She was then partially insensible, with slight convulsive twitchings of the hands, and sometimes of the whole body, the latter being with difficulty restrained. She appeared to suffer pain in the epigastrium,

which she was beating violently with her hands. Contrary to orders, she had eaten a small piece of steak for supper, and soon after was seized with pain: her face was rather flushed, and her pulse somewhat quickened. Unaware of my presence she made several ineffectual attempts to induce vomiting, by tickling her throat, &c. Some sulphate of zinc soon relieved her, and sensibility gradually returned while the emetic was acting. A sinapism to the epigastric region, and immersion of the feet in hot water, followed by some refreshing sleep, recruited her, and in a day or two she was as well as usual. This patient has had one, if not two, similar attacks; both, if my recollection serves me right, occurring after supper.

Case II.—Jan. 12, 1849. I was sent for in the evening to a neighbouring farm-house, to see one of the carters. I found him reclining, supported by one of his fellow men, writhing in agony, partially insensible, with his hand rubbing the region of his stomach. He could not answer any questions, and as he had just returned from town it was very doubtful what were the contents of his stomach. The boy who accompanied him to town did not think he had eaten anything since breakfast, when he had some bacon. (This, I believe, was correct.) Some sulphate of zinc acted speedily, bringing off pieces of unchewed bacon more than half an inch square. The same treatment was pursued, and in a day or two he was at work.

Case III.—Mr. H. M., æt. 20, the son of a farmer, and a young man of very intemperate habits, was said to have had a fit. Living close by, I saw him almost immediately; he had tumbled down in the yard, and from that place been conveyed to his room. He had then every appearance of delirium tremens; the trembling hand and tongue, talking in a rambling manner about business, &c. I learnt that he had just breakfasted when seized. I gave him an emetic; as soon as it acted, all trace of delirium disappeared. In the evening I was again sent for; he had been taking some toast with his tea, and while eating had had another attack, the delirium assuming the same character. After the action of an emetic it went off. The bowels had been rather costive, and some colocynth and calomel pills were given him. I ventured to tell his parents that it was not improbable he might have an attack of delirium tremens. Two days after, it set in with tremendous violence; the stomach so irritable that it rejected everything fluid. He had no sleep until he had taken nearly fifty grains of opium, in three or four grain doses every hour. He recovered perfectly, the tone of the stomach returning under the use of tonics.

Art. 23.—*On Obstruction of the Rectum from the Use of Diseased Potatoes.* By John Popham, M.D., Physician to the Cork infirmary.

(*Lancet*, Jan. 19, 1850.)

[The peculiar condition alluded to in the following paper had been previously noticed by Dr. Banks and Dr. Donovan. The following are the leading features of the disease, as given by Dr. Popham.]

The patients generally, when brought for relief, exhibit all the appearance of extreme abdominal suffering. The action of the hands

affords a valuable diagnostic sign, they being constantly engaged in compressing the lower regions of the abdomen, or during a strong expulsive effort transferred to the knees, the patient stooping forward, and keeping in the breath, so as to bear down with the whole force of the muscular system. Indeed, the sudden attacks of pain, the restlessness, and the natural efforts for relief, strongly resemble the throes of a severe case of labour, though so intense is the suffering, that I have been assured by females who have experienced both, that they would go through the anguish of their worst confinement ten times over, rather than undergo this ailment. Cramps in the extremities not unfrequently accompany the accession of pain.

Another sign, which we considered almost pathognomonic of this ailment, was the peculiar fætor emanating from the patient. It is impossible to describe this offensive smell by comparison, as it was altogether *sui generis*, presenting nothing of the natural feculent odour of the evacuations. The epithet "sour" which has been employed to describe it, seems to me misapplied, as it appeared to us more like the effluvium from a combination of vegetable and animal matters in an advanced stage of putrescence. Its insupportable nature to the stomach may be judged from the fact, that during the measures necessary for the relief of the patient, the nurses of the infirmary, though habituated to disagreeable smells, yet could not abide this putrid and disgusting odour, without being seized with retching.

On inquiry as to the state of the bowels, the description given is vague, and apt to lead a practitioner into error who had not met with the disease. Some of these patients state that their bowels are obstinately confined, while others represent them as being too free. There is some ground for this inconsistency, as the solid contents of the bowels are retained, while there is a continual oozing of liquid and gaseous matters in consequence of the loss of retentive power in the sphincter muscles. On making an ocular examination of the anus, it reveals the nature of the disease, presenting a patulous orifice not unlike the appearance of it in the last stage of parturition, when the perinæum is forcibly distended. The contractile power of the sphincters is paralysed, and the margin of the anus is flaccid, irregular, and shallow, being completely passive under the expulsive efforts. Portions of the contents of the rectum can be seen at or near the outlet, and on introducing the finger, the bowel is found in a state of great distention from an impacted mass closely adhering to its walls, and consisting chiefly of the skin and diseased portions of potatoes. The introduction of the finger is attended with great pain from the increased sensibility of the mucous membrane of the rectum. In all the cases which I have seen, an erysipelatous ring of two or three inches in depth surrounded the anal orifice, probably from the irritation caused by the liquid discharges continually percolating through the open sphincter.

Another symptom present in these cases, and one of the most urgent in constraining the person to seek relief, is retention of urine. This may be complete or partial, but I have more frequently met with it in the latter form, some urine generally dribbling away during the expulsive efforts. It was curious that in several cases "the stoppage of

water" drew off the patients' attention entirely from the obstruction of the bowels, and was the symptom which was chiefly complained of. In all, it seemed to greatly aggravate their sufferings, the patient almost every minute getting on his hands and knees, or rushing from the bed to the night-chair, and after the most exhausting exertions, succeeded only in passing a few drops. Yet even this small quantity produced momentary relief, and when the introduction of the catheter was resisted, its evacuation was materially assisted by warm fomentations and moderate compression over the bladder. In none of the cases which I have seen has this symptom continued after the bowels had been completely relieved, neither has any injury accrued to the bladder from its prolonged distention, though in advanced stages of this disease such an occurrence is not improbable.

On examining the other symptoms of this disease, we find that some of them bear no adequate relation either to the degree of anguish felt by the patient, or to the severe constitutional disturbance existing in other forms of intestinal obstruction. Thus, in the cases which occurred to us, the circulation was not quickened as much as might be anticipated: the pulse in few of the patients exceeded 100; and during a remission of the symptoms, fell much below it. The appetite likewise did not seem to suffer much. The abdomen is considerably distended, and great pain is felt on pressure, especially over the hypogastric and iliac regions; but the sensibility of the surface is not much increased. In debilitated habits there exists great prostration of the vital powers, with chilliness of the skin; while in persons of sanguine temperament you meet with a flushed and anxious countenance, and a skin hot and copiously perspiring. It was remarkable that vomiting, a symptom so generally present in diseases of the first portions of the alimentary canal, was absent in our cases, its presence being the exception, instead of the rule. We may, perhaps, attempt to account for the absence of this symptom by the remoteness of the seat of the disease from the stomach, as this organ is more readily engaged in affections of the small than of the large intestine. Indeed, from the closeness of their functional relations, the small intestine might be regarded as a continuation of the stomach, participating as the complementary organ in the conditions of the latter, both in health and disease. On the other hand, the interposition of the ileo-cæcal valve seems a barrier between the large intestine and the stomach, altering completely their physiological and pathological relations. Thus, in ileus, vomiting is a very early symptom, and an antiperistaltic action of the small intestine occurs, by which, occasionally, stercoraceous matter is thrown up; while in dysentery, especially when the disease has not extended to the small intestine, vomiting is a rare symptom, the natural peristaltic action being augmented by the disease. In strangulated hernia, also, it has been observed by Scarpa, "that surgeons who have observed much of this disease can appreciate the value of vomiting as a symptom, by the aid of which they discriminate whether the incarcerated hernia be formed by the small or the large intestine." Of course an interruption to the freedom of passage through the large intestine cannot

occur, without causing, after a time, disturbance of the small, so that the symptoms become blended; but, in the present case, the obstruction was not complete, and partial relief was undoubtedly afforded by the escape of the fluid matters.

The disease for which the present affection is most liable to be mistaken, and in which the mistake would be most injurious, is dysentery. Thus the tormina and tenesmus, the dribbling discharges, the dysuria, and the offensive smell, may mislead a hasty examiner; but the history of the case, the state of the tongue, which in this disease is seldom altered, the character of the evacuations, and, above all, the ocular examination of the anus and rectum, are sufficient to distinguish the two diseases.

As to the treatment of this affection, after it has passed the earlier stages, there is but one which is likely to be attended with success, and that is, the unloading the infarcted bowel by mechanical means, as all purgatives are unavailing, and even mischievous, until the rectum is cleared. This may be done by a scoop or spoon, the handle a little bent, or, better than either, the finger as far as it can reach; and after removing the portions of the mass nearest the outlet, considerable assistance may be gained by throwing up gradually an enema of soap and water, which seems the best solvent of the cakes of potato-skins closely matted together. This cannot be done without great pain and some hemorrhage, as portions of the mass are almost imbedded in the rectum, and the mucous membrane is in such an irritable condition, that much forbearance is incumbent on both patient and physician. As soon as the contents of the rectum near the anus are removed, the upper portions slowly descend, aided by the expulsive efforts, and, by degrees, the long flexible tube can be passed up into the sigmoid flexure of the colon, after which, enormous discharges are generally passed.

The substances removed from the rectum are found to consist nearly altogether of the epidermis and diseased portions of potatoes, though we have occasionally met with grains of Indian corn and turnip-seeds, swallowed in an unboiled state by persons suffering from extreme famine. There is little or nothing of the usual excrementitious discharges, the mass, when broken up, being merely the residue of the potato tinged with blood, and mixed with a brownish liquid of an insupportable odour. In the greater number of our patients, the diseased or "black potato" was the sole article of food procurable; and it is found, on examining the diseased tubers with the microscope, that though the walls of the starch-cells are largely destroyed, the granules themselves exist in great numbers. Another matter of much importance is the pathology of the disease. Hitherto the potato has been known as an esculent, so invariably wholesome, that in works on toxicology allusion is only made to the poisonous nature of the berries. Hence the curious effects which have been lately noticed as resulting from the tuber when diseased, become of importance in any future description of the natural history and properties of the plant. It becomes an interesting subject of inquiry whether disease developes in the tuber any properties of an acro-narcotic nature, analogous to those possessed by other groups in the same natural family. The

researches of Otto, as noticed by Liebig, have discovered in the potato, under peculiar circumstances, a small portion of an alkali, named by him Solanine, whose salts are possessed of very poisonous properties; and Sir Robert Kane, in his valuable work on chemistry, is disposed to attribute the injurious effects of unripe potatoes to this principle. It is, then, deserving of further inquiry, whether this may be developed in more abundance by the existing disease. The local effects which the use of the diseased potato seems to exert on the rectum, would admit of explanation in this way, the state of erethismus produced in the mucous membrane being attributable to the acrid nature of the accumulation, while the paralysis of the muscular fibres of rectum and sphincters may arise from its sedative influence. The dysuria may be explained on the excito-motory theory, the source of irritation being within the rectum; the excitor nerves of this excretory organ convey the impression to the spinal cord, from whence it is reflected to the sphincter of the bladder. Examples are given by Dr. Marshall Hall, of retention of urine being caused by the irritation in the rectum, produced by tying an hemorrhoidal tumour. It would favour this explanation, if, as in one of Dr. Banks's cases, the symptom of retention of urine continued for some days after the rectum was cleared. It must be confessed, however, that most of the symptoms may be explained by the mechanical effect produced by the accumulated matters. The rectum is over-distended by an incompressible substance, and the pressure of this, when accumulated in sufficient quantity, being exerted in every direction, tends to draw the orbicular muscles from their natural state of contact. The retention of urine, in like manner, may arise from the pressure of the impacted mass on the neck of the bladder. In all our cases, as soon as the rectum was fully evacuated, all the symptoms subsided. Still the question arises, why it accumulates in the lower bowel? If the poisonous properties of the diseased tubers be not borne out by further examination, it would seem only explicable in this way. The arrest of development which takes place in the plant from the blight, and its increased liability to decomposition, impair very materially its nutritive properties. As the persons who use these black potatoes are generally in extreme destitution, they are obliged to use them in very large quantities, and without any other food. Hence a vast surplus of foreign innutritive matter takes place, which should be thrown off from the system. It is highly probable, that from the deficiency of nutrition there occurs a minus and altered state of the secretions which supply the natural stimulus to the process of defecation. Hence, with a greater demand for these secretions, there is a diminished supply, and the retention of foreign matters in the bowels, where the tendency to decomposition is assisted by heat and moisture, must produce noxious effects. Though, with respect to the persons affected by this disease, there seems no exemption for either age or sex,—young and old, male and female, having applied for relief,—yet there appears a greater liability to the disease in some persons than in others. Thus, one of the last cases brought to the infirmary was a boy, eight years old, whose father, mother, and six brothers, had eaten of the same food, without any visible injury; this boy, however, had been previously out of health.

It is a curious fact, that domestic animals, though partaking of the diseased potato with much relish, do not appear to suffer from it in the same way as the human subject.

Art. 24—*Case of Intestinal Concretion in a Young Female.* By Dr. Ritchie.

(*Edinburgh Monthly Journal*, July 1849.)

The mass described by Dr. Ritchie consists entirely of long human hair, and was extracted, after death, from the stomach of a girl æt. 21, admitted into the Royal Infirmary, under his care, on the 4th October, 1848. She came in with great meteoric distension of the abdomen, feculent vomiting, and the other usual symptoms of obstructed bowel, and the menses were stated to have been always irregular. On the 5th, when he saw her first, he perceived some hardness to the left of the umbilicus, but the presence of the tumour in question was concealed by the great tympanitic swelling of the bowels till the 12th, two days previous to which the constipation had been overcome, and the general distension removed. The tumour, which lay in the epigastrium, and encroached a little on both hypochondria, and which also presented a rounded convex exterior, and a well-defined margin, simulated the appearance of the liver so strongly that it was mistaken for that organ, till it was seen that, on grasping it through the parietes, and pulling it downward, a considerable hollow space could be produced between its upper edge and the ensiform cartilage.

Immediately on the removal of the ileus, which happened under the steady use of half a drachm of magnesia every four hours, an enema of tepid water three or four times daily, warm fomentations to the abdomen, and a grain of opium every six, and then every eight hours, the pulse began to rise, severe diarrhœa came on, with aphthous exudations on the throat, and she died on the 24th, or twenty days from admission. The notes of her inspection are as follows:—

On opening the abdomen, the tumour formerly described was found to be situated in the stomach, on opening which, a mass of the precise shape of that organ was extracted. It weighed, as removed from the body, twenty-one ounces, and, except at two parts, corresponding to the line of the greater curvature of the stomach, where, for about an inch and a half at each part, there was an incrustation of a dirty or ash-coloured pasty substance,—it consisted exclusively of an accumulation of coils of moist female hair. The portions of stomach which had been in apposition with the patches of incrustation on the hair, were obliterated nearly to the peritoneal coat. The mucous lining was here and there evenly injected, and throughout it numerous elevated patches, consisting of groups of follicular orifices in a state of ulceration, were observed. The pylorus was rather thickened, and nearly two inches to its left there was a considerable cluster of ovoid bodies, varying in size from that of a dried raisin to that of a boiled garden pea.

The small intestines were greatly inflated—very vascular, pretty firmly united together, and the inflammation extended over much

of the omentum, mesentery, and peritoneum. The pelvis was filled with thin fæces, which had proceeded from a rupture in the coats of the ileum, a few inches above the cæcum. Between this lesion and the cæcum, another hairy concretion of one and a half ounces' weight, were discovered. These consisted wholly of hairs of various sizes similar to those in the stomach. The other organs were healthy, except that the lungs were congested, and slightly emphysematous.

This girl came from a distance, but it was ascertained by inquiries made of her mother, that she had for many years had a practice, from which she could not be restrained, of pulling hair from her head while employed at work as a factory weaver, and swallowing it.

The above engraving accurately represents the concretion.

Art. 25.—*On Electro-Galvanism in a peculiar Affection of the Bowels.* By William Cumming, M.D., F.R.C.P.E.

(*Medical Gazette*, Dec. 7, 1849.)

We are often consulted by patients who, at the first glance, convey the impression that they are imperfectly nourished: they have an emaciated appearance. In detailing their symptoms, they lay great stress on a feeling of emptiness, or rather faintness, at the epigastrium: they complain of exhaustion there. They generally next direct our attention to a more or less fixed pain, either in the left hypochondriac or iliac region, sometimes both, more frequently the latter,—a pain from which they are rarely exempt, and which is sometimes very severe and acute, though oftener gnawing and irritating. If they have ever been induced to apply a mustard blister to the seat of pain, they dwell on the relief, great though temporary, they have experienced from it. The stomach, in most of the cases I have seen, has not been irritable: it commonly retains and digests the food; but pain is frequently felt in the course of the colon, in a period varying from an hour to two hours thereafter. The bowels are at one time constipated, at another lax, in the same person. Some are uniformly costive, others more frequently loose; but in all (*and this is the characteristic mark of the disease*) a peculiar membranous fibrinous matter is discharged. In some cases it is stringy, in others tape-like in its form; in others, again, in small masses, resembling fat; while in the milder cases it is more diffluent and gelatinous. That the disease has, from want of proper examination of the intestinal evacuations, frequently eluded observation, I know too well from my own experience, and that it has consequently been maltreated does not admit of doubt. The last thing the patient will mention (if, indeed, he mention it at all) is the characteristic discharge. In addition to this, there is not unfrequently a considerable discharge of blood from the bowels, and that, too, where no hæmorrhoids can be detected. Almost uniformly there is great pain during evacuation, and always a feeling of exhaustion for some time after. In most of the patients there is a peculiar expression of countenance, so striking that one who has seen many such cases can, with tolerable certainty, tell, without more minute examination, what the nature of the complaint is. It is an expression of anxiety; quite different, however, from that which usually marks organic disease.

Scarcely less characteristic of the disease than any of the preceding symptoms is the state of the mind. In all there is more or less nervousness, greatly increased towards night, inducing sleeplessness; and when, towards morning, sleep does come on, nightmare is frequent —dreams (generally of an unpleasant nature) invariable. One lady was troubled with spectral illusions. Professor Simpson has informed me that he has remarked, in most of the cases that have come under his observation, a deficiency of memory in regard to words; the patient knows what he wishes to express, but cannot find the expression at the moment. In my own experience I have not observed this so frequently, and certainly in very many cases it is wanting.

When the affection has been of long duration (and too frequently this is the case before we are consulted) the mental irritability is very great; and what is more painful still, the patient's feelings and views are perverted and distorted.

In endeavouring to trace the history of the disease in each individual case, we are generally told by the patients that they cannot indicate the precise time when their symptoms arose. Not unfrequently they ascribe their origin to drastic medicine; and, I believe, that the pernicious habit (now, happily, not so common as formerly) of taking aperient medicine, in one form or another, is by far the most frequent cause; but it is certainly not the only one. It is vastly more common in the female than the male sex, though by no means uncommon in the latter; and in the former it is very often accompanied by dysmenorrhœa, and occasionally by the membranous form of that affection.

[Of the treatment, the author says:]

1. The primary, and, I believe, indispensable point, is total, or almost total, abstinence from aperient medicine. With this view, I was till lately in the habit of relieving the bowels every third or fourth day by enemata of simple warm water, or with the addition of a tablespoonful of oil, and perhaps every ten or twelve days a dose of castor oil by the mouth. These means, simple though they be, do mischief; and, therefore, it was desirable to discover a mode of effecting the object without the disadvantage of its being at the same time an irritant.

2. External counter-irritation. This, in the form of a mustard blister every night or second night, gave considerable but temporary relief, and was always most grateful to the patient; but in very many instances it failed utterly, and, where it did benefit, the relief was transient.

Circumstances, which I need not at present detail, led me to surmise that electro-galvanism would accomplish both these indications of treatment without the disadvantages with which the other means were chargeable; and the results of its use in a considerable number of cases of this disease, warrant me, I think, in affirming that it is competent of itself to the cure of almost every case, and that, aided by an internal medicine which I shall refer to presently, it will cure both certainly and speedily. In the first place, it acts as an aperient,—seemingly by its action on the muscular coat, as well as the mucous membrane of the bowels. *In every case* in which I have used it this has been the effect; and if it had no other consequence than this, the advantage would be prodigious; for as in a multitude of instances the disease has been traced to the use or abuse of laxative medicines as a cause, and as during the treatment even the mildest aperients irritate the membrane, and so far aggravate (temporarily) the disease, the evacuation of the bowels, by any means that do not irritate, is obviously of great consequence. But the electro-galvanism does more than this; for, 2dly, it induces such a state of the bowel as prevents the formation of the peculiar secretion; that is, it restores it to a more healthy condition. I purposely avoid using expressions which might involve a theory as to its mode of action, and do not profess to tell how this result takes place: the fact itself is indubitable. 3dly,

it supersedes counter-irritation. The pain in the side, for the removal of which the counter-irritant was employed, is relieved by an application of the galvanism for at least twenty-four hours; in many cases for a much longer period; but as the agent is applied once a day, where no contra-indicating cause exists, till the disease is removed, the pain may be said to be abolished.

Galvanism, therefore, might of itself effect a cure; but I have generally combined it with the internal exhibition of tar, and have thus effected cures in a much shorter time than by either of these means singly. For some time I was in the habit of giving internally the nitrate of silver, arsenic, or cod-liver oil, as circumstances directed; but latterly I have confined myself to the administration of tar, suggested first, I believe, by Dr. Simpson, and have found it of all internal means by far the most effectual. It relieves the feeling of exhaustion at the epigastrium, imparts an agreeable warmth, and promotes appetite and digestion; but by itself it is long in effecting a cure, even in slight cases, in all the trials I have made of it. The plan I have hitherto adopted has been, to give the tar, in the form of pill or capsule, thrice a day; the electro-galvanism (Kemp's, of Edinburgh, machine, is the one I have used), is applied for a quarter of an hour daily, the intensity being increased from time to time. Steady perseverance is requisite. With this the case must be obdurate indeed that will resist a cure.

[The following remarks on constipation are appended as a note:]

It is perhaps a bold assertion that few cases of constipation will resist the action of electro-galvanism; but the number of cases of various kinds in which I have used it with success, leads me to infer that in all, except those arising from organic or mechanical causes, this agent will not only act as an aperient, but give such tone to the muscular and mucous tunics, as in time will lead to the natural discharge of their functions. The use of galvanism has been too extensively limited to paralysed organs. The same influence that will restore vigour, either entirely or partially, to a muscle or set of muscles that have lost their power, will obviously, under due regulation, impart it to those in which it is diminished; and probably few will question that the muscular fibres of the intestinal canal have a function to perform not the least important of the various portions of that tube; that in torpor of the bowels they are practically partially paralysed; and that therefore we might *à priori* expect that galvanism, by supplying an appropriate stimulus first directly, and then secondarily by its probable action on the sympathetic system, would have a beneficial operation. If this be true (and if not theoretically, I am satisfied that it is practically so), what innumerable wretched symptoms and feelings may not be removed, to which so many of both sexes are victims, and which all medical practitioners have daily to contend against as the accompaniments and consequences of *habitual constipation!* The preceding observations will tend to show that in one of the many forms of intestinal disease galvanism has valuable effects.

[In a subsequent communication, Dr. Cumming gives the following directions respecting the mode of applying the galvanic current. He says:]

The instrument I use is made by Kemp, of Edinburgh, and has the

two-fold advantage of transmitting the stream of electricity through the part operated on *continuously, without jerk or shock*, and of being regulated, so that the intensity may be either so slight that it can scarcely be felt, or so strong that it can scarcely be borne.

It is so constructed that the conducting wires, to which are attached sponges, can be applied to two different parts of the body, between which the stream passes. In the disease to which my article refers, it has been my custom to place one of the sponges (the patient reclining on a couch) on the spine, between the upper portion of the lumbar and the lower part of the sacral region; while the other is placed over the abdomen, parallel to the tract of the colon, along which it is drawn, allowing it to rest two or three minutes over five or six spots, at equal intervals of this tract. The intensity of the agent, slight at first, is daily increased, till it creates either pain or a feeling of great pressure.

If the case be one of constipation merely, the same treatment is adopted; and I think I am entitled to say that the success met with in these cases will, in time, lead to its adoption in preference to the other curative modes now in practice. Daily experience confirms my previous statements, and justifies me in urging it on the attention of the profession. I had lately under my care a patient who had suffered from constipation for sixteen years. During the first seven years she had been relieved by aperients; but at the end of that time, they, though varied and sufficiently powerful, ceased to affect her. She then had recourse to injections, which she had employed more or less regularly till I saw her. It need not cause surprise that she suffered from piles and prolapsus of the rectum to a very painful degree, and that she was both weakened and rendered thoroughly miserable by this unnatural state of matters. In the course of two months she was effectually cured, a natural evacuation having been procured daily after the tenth day from the commencement of the electro-galvanic treatment. It would be an unnecessary waste of time to record the many similar cases that have been under treatment and benefited. A few trials, which are easily made, will convince any one that I do not overstate the favorableness of the results. The only difficulty I have experienced is the apprehension on the part of the patients that they must encounter an unpleasant shock. This difficulty the first application completely surmounts.

This treatment is not urged as being new in its application to constipation, but because it has not been so frequently and systematically pursued as its efficacy would warrant. Nor are its effects in the removal of this state more worthy of consideration than its happy influence over the general system, by which it restores the tone of the body, and relieves the oppression of mind so invariably accompanying that condition. And this, of course, in its turn reacts on the local inertia, and co-operates with the treatment in maintaining the elasticity and vigour thus produced.

Nor is it in constipation only that its influence is favorable. On the diarrhœa that so frequently alternates with a confined state of the bowels, to whatever cause short of organic disease it may be assigned, it exerts a beneficial action. And perhaps it is not difficult to com-

prehend this, if we may be permitted to conjecture that both depend on inaction of the muscular tunic of the intestinal canal. It is probably not presuming too much to infer that the vermicular motion of the bowel, which is produced by that part of the bowel, favours the elimination of the mucous secretion. If, then, this secretion be not thrown out in sufficient quantity to lubricate the internal coat, and mix freely with the fæcal matter, the irritation produced by the latter acting on a surface not adequately protected, can scarcely be supposed not to give rise to an amount of morbid excitement, which shows itself in the form of diarrhœa, and is so far a beneficial effort of nature to compensate for the regular and natural action of the bowels. And if so, we may thus understand how the same agent may remedy two very different states.

Art. 26.—*Clinical Convictions respecting Ascites, expressed in the form of Propositions.* By Dr. Dubini.

(*Bulletino dell. Scienze Mediche,* and *Brit. and For. Med.-Chirurg. Rev.*, April 1850.)

1. When ascites is not the result of a pre-existing, or present, acute or chronic primary peritonitis, it will be found to depend upon hypertrophy with degeneration of the hypochondriacal viscera, the presence of abdominal tumours, a prior or existing dysentery, or upon *cirrhosis* of the liver.

2. In fact, peritonitis, depending on these various conditions of the viscera, is almost always the efficient cause of the effusion. In respect to the operation of visceral hypertrophy and abdominal tumours in inducing it, there can be no doubt. In dysentery, with ulceration of the mucous membrane, inflammation of the peritoneal coat is found. In *cirrhosis*, observation would seem to show that the fluid may collect in consequence of peritonitis, or, on the other hand, mechanically from obstruction of the capillaries of the liver.

3. Post-mortem examinations prove, that defective absorption by the lymphatics, as a cause of dropsy, is a scholastic fable. Atony may follow the distension and destruction of tissues in the dropsical, but it is never, or with exceeding rarity, primary.

4. Ascites must not be confounded with other serous effusions, especially with general anasarca. The common causes of general dropsy, as hydræmia, scarlatina, Bright's disease, suppressed perspiration, &c., are not the direct causes of ascites, which, as already observed, has its own special cause, and seems also to recognise other directly or indirectly predisposing ones, such as intermittent fevers, abuse of spirituous drinks, and a certain inelastic and relaxed state of the organic tissues.

5. Diseases of the heart, so frequent a cause of anasarca, are never the primary cause of ascites; and if the two are found in co-existence, it is a mere coincidence. A diseased heart may lead to a hypertrophied or degenerated state of the liver, and this may give rise to ascites.

6. In enormous and old ascites, in which long and forcible pressure has been exerted upon the viscera by the fluid, a shortening of the

intestinal tube takes place. In one case, the entire length of the canal was not more than three times that of the body.

7. The treatment by means of drastics is prompt, and always much desired by the patient, who wishes to relieve the distension as rapidly as possible. It is rare for them, however, to produce a permanent cure; and the relief they at first afford is often followed by a relapse, under the influence of which the patient quickly finds himself in a worse state than before. If a red, shining, or excoriated tongue indicate a pre-existing diarrhœa, in place of a relapse, drastics will cause irreparable mischief, by provoking a second and artificial diarrhœa, which will only cease with life itself.

8. Diaphoretics, employed in this generally non-febrile disease, are praised in the books; but what practitioner ever prescribed them for apyretic ascites? Nature alone, in particular cases, contrary to our physiological laws, induces simultaneous profluvia of sweat and urine, until the ascites is totally dispersed. Iodine and mercurial frictions are but therapeutical delusions, although in certain cases, in which the symptoms of peritonitis still exist, calomel may be of service. The frequent failure of diuretics is well known.

9. When even the local abstraction of blood is no longer admissible, and it is hence presumable that the peritonitis no longer exists, *compression* of the abdomen by a bandage is a useful aid to diuretics. Like all other means it may be misused; but twelve years' experience of it leads the author to state, that if the dropsy be not encysted, and the lower extremities have not become œdematous, compression will not only, in the majority of cases, remedy the effect, but frequently also remove the morbid cause of the effusion. In very many cases, he has seen the same diuretics, which had long been uselessly employed, succeed admirably as soon as a methodical compression was conjoined to their use.

10. After recovery, when the ascites has depended upon dysentery or primary chronic peritonitis, a relapse may be prevented by opening an issue at the inner side of the leg, just below the knee. After the application of a very small blister, a minute ivory ball may be compressed against the denuded surface to effect this.

11. There are certain cases of anasarca, from *hydræmia*, in which the ascites, though not primary, is very considerable, and threatens suffocation from its rapid increase. In these there is always found a degree of hypertrophy of the liver, a section exhibiting it of a bright yellow colour, and of the consistence of soft chalk. The blood is scarcely red, and very watery. All the symptoms of chlorosis, and some of those of scorbutus, are present, as palpitation, syncope, vertigo, tinnitus, muscular debility, pallor of the mucous membranes, anorexia, thirst, constipation, paucity of urine, and sweating, with frequent attacks of epistaxis. In these cases, the *souffle* heard after the first sound of the heart is rather referable to the serous crasis of the circulating fluid, than to any defect in the circulatory organ. For this train of symptoms the author had long sought medicinal substances, which, while they proved unstimulating diuretics, might remedy the condition of the blood without disposing the organism too much to a state of phlogosis, which, in subjects of hydræmia, always terminates

in new effusions, that in their result prove fatal, if they do not so in their immediate consequences. What he terms a "martial lemonade," has best fulfilled the chief indications by causing free diuresis. It is formed by dissolving six grains of sulphate of iron in a pint and a half of sweetened water, adding a drachm of sulphuric acid. The use of this is contra-indicated if there is much febrile disturbance.

ART. 27.—*Case of Intussusceptio. Four feet and a half of Intestine passed per anum.—Recovery.* [The following interesting though not unique case is reported by Dr. SHELDON, who says:]

The patient is now completely recovered, having passed per anum four and a half feet of his intestine, which I have in a state of preservation in spirits; the adhesive inflammation having, in my opinion, set in, and union taken place at the upper part, where the intussuscepted part commenced, while mortification was in progress in the intussuscepted part, and so the continuity of the intestinal canal was secured, and when the part was thrown off it was carried on through the lower part of the intestinal canal. The man's name is Michael M'Laughtan, a native of Raphoe, aged 63; he is a farm-labourer. He was attacked, on the 4th of March instant, with violent spasms and pain in the epigastric and umbilical region, with the feeling as if the bowels were drawn towards the spine with a sharp cord, with violent vomiting and frequent desire to go to stool, but without being able to pass any thing; pulse 96, and weak. Gave him laudanum 45 drops, sp. lavandul com., ℥ij, in an ounce of peppermint water, which made the vomiting less frequent. I then gave ol. ricini, ℥j; ol. croton tig, iij. gt.; and in two hours after passed a flexible tube up the bowel, as far as it would reach to the tigmoid flexure of the colon, and injected an enema of strong soap solution, to the amount of three quarts, which brought away a large quantity of grumous blood mixed with hardened fæces; had a mustard cataplasm applied over the bowels.

On the 5th, pulse 86, and rather firmer, administered an enema as formerly, adding to it sp. turpenthinæ, ℥ij, and ol. olivar, ℥iv; repeated the mustard cataplasm. The lower part of the bowels were greatly relieved, but the pain continued in the epigastric region. In the evening administered another enema.

6th.—Pulse 80, tongue clean, vomiting less frequent; pain in the epigastrium continuing, but not so severe. Gave the following liniament to rub over the stomach and bowels:—Ol. terebinth. ℥i; tinct. opii., ℥ss; ol. croton tig., ℥ss; and rubbed till there was a perfect eruption over all the parts in three hours.

7th.—Pulse 82, firmer and stronger. Gave him ol. ricini, ℥j; tinct. opii, gt. xx; ol. croton tig. gt. ij on an ounce of peppermint water, and in four hours after repeated the enema; the bowels were freely acted on, and in the evening all the symptoms greatly relieved.

8th.—Pulse 78, tongue clean. Gave him a glass of decoct. cinchonæ every sixth hour, and continued giving him enemata in as large quantity each time as the bowels would receive. Every day up to the 11th inst., even after rising from stool, he found the bowel

hanging from him, and getting hold of it, pulled at it, and with some difficulty got it brought away. He is now so far recovered that he has been working with some potatoes in his garden. He complains of nothing but a coldness in the left epigastric region.

Medical Times, April 20, 1850.

[It is fortunate that the purgative medicines did not contravene nature's efforts in this case. E. H. A.]

SECT. VI.—DISEASES OF THE SKIN.

Art. 28.—*Treatment of Lepra and Psoriasis.* By M. Emery.

(*Bulletin de Thérapeutique*, and *Brit. and For. Med.-Chir. Rev.*)

M. Emery states, that when appointed to the St. Louis, several years ago, he tried all the various remedies so warmly recommended by authors, and of all these *arsenic* proved the best internal medicine; but besides the inconveniencies which it sometimes gave rise to, its operation was very slow. The external use of *strong tar ointment* (one third to one fourth of tar) produces, in fact, a far more rapid cure than any other means. Of from 1500 to 1800 patients who have employed it, five sixths have been rapidly cured, and that without any ill consequence, or any greater frequency of relapse than after internal means. In 228 cases of psoriasis, the arsenic and tar were used conjointly, and 200 were cured within two months. Of all the preparations of *mercury* the *protiodide* is alone efficacious; but it excites much irritation of the skin, and if applied to large surfaces, produces salivation. The *iodide* of *sulphur* is useful in psoriasis of the head; but if applied to large surfaces produces erysipelas. The conjoined use of the arsenic and tar ointment constitutes, in fact, the best medication. In a disease so apt to recur, the greatest attention to diet is essential; and on the least symptom of recurrence, resort should be had to medicine, without waiting until it has become very bad. Before commencing, the patient takes a bath, and rubs in the ointment with gentle friction three times a day. In two or three days the strength of the ointment and activity of the friction are increased; and when the disease is of old standing, linen rags smeared with the ointment are to be kept applied. A tepid bath is taken once or twice a week. It is only in very irritable skins that the treatment is interrupted by the appearance of impetiginous pustules or furunculi. In about ten days we perceive, where the squamæ have fallen, a whitish circle circumscribing the patches, and extending from the circumference towards the centre. This is a sign of a decrease of the disease, which usually disappears in two or three months. With respect to the arsenic, we should begin with five drops of Fowler's solution, in four ounces of sugared water, which are to be divided into two doses. Every other day the dose is to be increased a drop, until

twelve are reached. If we observe that the patches are becoming thinner, and acquiring a blackish-gray colour, this is a sign of saturation, and the dose is not to be increased; but even when this is not present, it is rarely proper to go beyond twelve or fifteen drops. Sometimes the skin becomes hot and painful around the patches; but this is relieved by tepid lotions, demulcent drinks, and diminution of the dose. After twelve or fifteen drops are reached, a feeling of constriction of the throat, or severe pain of the stomach is perceived; and then the medicine should be suspended for a day or two, and recommenced *de novo* with the small dose. Pain near the heart, with palpitation, sometimes renders venesection requisite. If any contraction of the extensors of the limbs is observed, the medicine must be at once abandoned; and as soon as the blackish-grey colour of the patches appears, which announces saturation and an approaching cure (though such spots may remain for months) the arsenic must be discontinued.

Art. 29.—*Suggestions on the treatment of Eruptive Diseases of the Skin.*—By J. Moore Neligan, m.d., m.r.i.a., &c.

(*Dublin Quarterly Journal,* Nov. 1849.)

[Speaking of the chronic squamosus diseases of the skin, and more particularly of psoriasis, Dr. Neligan gives the following practical hints:]

Donovan's solution of the hydriodate of arsenic and mercury has been extensively used in the treatment of this class of cutaneous eruptions. I must, however, confess that I am not partial to the employment of any mercurial preparation in their treatment, when they affect the body generally. The only local form of scaly disease in which I have found a mercurial useful, is in pityriasis, and in it I find the yellow iodide of mercury productive of the best results.

The iodide of arsenic has also been found a remedy of decided efficacy in the treatment of these affections; it was first generally employed by Dr. A. T. Thompson. My own experience leads me to place more reliance upon it that on any other preparation of arsenic; but though I found it alone capable of curing many cases of psoriasis and lepra, I consider that its beneficial action is much augmented by combining it with the iodide of potassium and iodine.

On the importance of a milk diet, my experience leads me to the conclusion, that an adherence to it is of the utmost consequence in cutaneous eruptions, except where they occur in cachectic or broken down constitutions, or are attended with ulcers, or profuse and weakening discharges.

Tepid baths of *fresh* water, twice or three times weekly, will be found an adjunct of much importance in the treatment of scaly eruptions; they tend to restore the natural secretions, and prevent the accumulation of scales. They are especially useful when much local irritation exists. I have tried various local applications, but my experience leads me to prefer the tepid bath.

[The mixture of arsenic and hydrodate of potash alluded to, is made according to the following formula:—

℞ Liq. arsenicalis, ʒij ;
Syrup, Simp., ʒij ;
Aquæ Distill., ℥ss ;
Potass. Iodide, ʒss.

Of this a dessert-spoonful is given three times a day in water. To this mixture, in inveterate cases, six grains of iodine are added.]

Art. 30.—*On Acetate of Potass in Diseases of the Skin.* By Dr. Easton.—[The author was led to experiment upon the therapeutic value of this drug in inveterate skin diseases, from the perusal of Dr. Golding Bird's valuable lectures on "depuration of the blood," a notice of which will be found in our eighth volume, p. 257. The deductions of the author, in the present case, are perfectly legitimate, as it is one of the best ascertained facts in medicine, that an intimate connexion exists between cutaneous eruptions and morbid constitution of the blood, either in the super-addition of morbid products, or in the non-elimination of natural but effete matters. The cases narrated by the author include instances of psoriasis, lepra, and eczema. Some of these we transcribe.]

Psoriasis diffusor.—Sarah Miller, æt. 18, factory girl, of full habit. Lower extremities present the usual characters of psoriaris diffusa, skin hot, p. 72. Ordered warm baths, and a diuretic mixture of nitre and sulphate of magnesia. On the 24th September she commenced the acetate of potass, and in three months was discharged cured.

Lepra vulgaris.—S. B., æt. 15½. The eruption appeared five years since. He has tried vegetable tonics, sea bathing, various ointments, Fowler's solution, and iodide of starch, without benefit. He then took the acetate of potass, and in six weeks the eruption had disappeared.

[The author, in conclusion, remarks on the short duration of the treatment, and notices that in all the cases the urine was not only increased in quantity, but that its solid constituents were augmented in a remarkable degree. He also enters into an ingenious explanation of the *modus operandi* of the medicine, showing that it acts in virtue of its powers of accomplishing the metamorphoses of effete tissues, and that this is owing to its conversion into the carbonate of the alkali. That the same effects are not produced by the direct exhibition of the carbonate he admits, but does not explain the reason of the fact.]

Monthly Journal of Medical Science, May 1850.

Art. 31.—*Cryptogamic Vegetations in the Interior of the Hair in Favus.* By Dr. Wendl.

(*London Journal of Medicine,* March 1850.)

Dr. C. Wendl (Zeitschrift der K. K. Gesellschaft) has published an account of his having discovered cryptogamic vegetations in the interior of the hair in favus. After briefly referring to the observations of Gruby, Günsburg, Malmsten, and Lebert, he says :

I directed my attention to the interior of the hair, making use of a concentrated alkaline solution to render it more transparent. This solution acts on some parts of the hair in a very remarkable manner; in different strata of it, there appear small elongated gas-bubbles, with a sharp dark outline, giving the appearance of an interrupted canal; sometimes also larger gas-bubbles are seen lying at the outside of the hair. The latter gradually becomes more transparent; and, in the situation of the dark broken canals, there appear filaments formed of elongated quadrangular or roundish molecules; these extend through a certain portion of the hair, here and there giving off branches, and are to be found in all layers of the hair. These filaments consist of granules arranged like beads. Their transverse diameter varies; their length is also very variable; here and there only a few granules are linked together, while in other parts there are several dozens of them. The branches which spring from them are sparse, generally very short, and always single; the direction of these filaments is in the longitudinal axis of the hair. I have never seen them hanging from the outside, unless I had torn the sheath of hair, or the whole hair, by rubbing it to and fro on the glass, after it had been acted on for an hour by strong liquor potassæ. On the surface, one often indeed sometimes sees regularly arranged filaments surrounding the hair; but the most beautiful and conspicuous are these transverse granular filaments, at the place of exit of the hair from the epidermis. In the latter, which often remains hanging when the hair is torn out, are usually some pretty numerous groups of granules (sporidia), and here and there a granular filament comes into view, which passes transversely across the hair, or even seems to end in it.

I could not ascertain with precision the entrance of the filaments of the dependent epidermis into the hair; but I have no doubt that such is the case, because these granular filaments are most abundant at the above-mentioned point of exit; moreover, they decrease as they proceed upwards, and disappear at the end of two or three lines; they extend some way down, but not in such numbers, and do not seem to reach the bulb. The point of concentration of these filaments is, then, the place where the hair emerges from the epidermis; it is here surrounded with the vegetations of favus. In order to establish the fact, that the filaments in the hair are really fungous growths, it is necessary to examine fungi, but especially those of favus, under the action of strong liquor potassæ. There also is an extrication of gas under the microscope; the sporidia and thallus fibres are not dissolved, but are rendered more conspicuous, while the epidermis cells become faint. Dr. Hebra perceived the development of a fetid gas in his researches, when fungi were exposed longer than usual to the action of liquor potassæ.

With regard to the frequency of this appearance, it is to be observed, that in most cases of favus it is possible to find these fungi in the hair, especially when light. When it is dark-coloured, it requires to be macerated about half an hour in strong liquor potassæ; but in light hairs, the sporidia can be seen in from five to ten minutes.

This remarkable circumstance—the growth of fungi in the interior of the hair in favus—gives an explanation of its well-known dryness

and brittleness, for the nutrition of the hair must be interfered with by the parasitic structures. Moreover, these observations throw light on the long known rule in dermatology, that, in order to cure favus effectually, the hair must be removed.

ART. 32.—*Cure of Scabies by Inunction with Lard.*—Dr. BENNETT has confirmed the assertion made by some Italian physicians, that sulphur ointment cures itch only in virtue of its oleaginous ingredient, which asphyxiates the acarus by stopping up its spiracula. Four cases are given in which the disease disappeared by the use of simple hog's lard.

Edinburgh Monthly Journal, Jan. 1850.

SECT. VII.—MATERIA MEDICA AND THERAPEUTICS.

ART. 33.—*On the Medical Employment of Electricity.* By Dr. TERZI.

(*Bulletino delle Scienzi Mediche*, and *Brit. and For. Med. Rev.*, April 1850.)

[A reference to our preceding volumes (iv, pp. 25, 170; v, pp. 119, 342; vi, pp. 76, 242) will remind the reader of the extensive application of electricity and galvanism to the treatment of disease, which have of late years been made. The subject is yet imperfect in its details, and, as we believe, capable of yielding unexpected results, if investigated, not in a mere empirical, but in a philosophical spirit. As an useful addition to our knowledge, we append the following communication:]

The author's mode of employing electricity varies with the object he has in view, and to an extent, perhaps, that may be considered somewhat fanciful. When he wishes to produce a chemical or chemico-dynamic, rather than a dynamic action, he employs Volta's, Wollaston's, or Daniell's pile; and the more intimately he desires to effect the chemical organism, the smaller is the pile, and the fewer elements does it consist of, so that a very feeble current is induced. This mode, he says, is further advantageous by enabling us to introduce into the economy certain medicinal substances appropriate to the nature of the case, by suspending them in, and uniting them with, the conducting fluid employed. When he wishes to produce an almost exclusively dynamic action, he prefers the cylindrical machine, or Leyden phial.

In cases of sensorial paralysis, in which the skin has lost its tactile sensibility, he brings the conductors into immediate contact with it, and directs the currents from the lower to the superior parts, this being the direction in which the sensorial impressions operate. In those of motor paralysis, he carries the currents into the substance of the muscles, by transfixing these with fine steel needles, which are then brought into inter-communication with each other, and with the

conductors, by means of a delicate wire, and the current directed from above downwards. In order, sometimes, to produce a temporary perturbatory effect, the direction of the currents is reversed. One advantage of this electro-acupuncture is the facility it affords of especially operating upon certain muscles instead of upon the fleshy mass at random. Thus, accordingly as the flexors or extensors may have become inert, the needles are passed into either, and movements of flexion or extension induced. These movements can be maintained during a brief period, the muscles undergoing an almost tetanic contraction, and palpitating, as it were, under the electric influence. When the continuous current is furnished by a very small number of elements, and directed to the extensor muscles of a limb, whose flexors are powerfully contracted, this contraction temporarily disappears, the limb remaining very flexible in all directions.

Dr. Terzi relates several cases in detail, in some of which a complete cure, in others amelioration, was procured. We may mention the chief particulars of some of these. The first was a case of *paraplegia, with atrophy of the muscles of the legs, and anchylosis of the tibio-tarsal articulations*, and occurred in the person of a girl, æt. 19, who had been first seized about six months before with difficulty of deglutition; the whole of the voluntary muscles after a while became paralysed; and notwithstanding active antiphlogistic, revulsive, and antispasmodic treatment, little amendment ensued. At the commencement, some *engorgement* of the medulla was supposed to exist; but however this might have been, when the author was desired to undertake the electrical treatment of the case, he regarded it to have assumed the intensity and conditions of a primary neurosis, in obedience to his physiological views, which lead him to believe that the nerves participate in the possession or generation of that power, at all events under certain circumstances, of which they are usually merely the conductors. This induced him to encourage the patient by a sanguine prognosis. He considered the indications of treatment to be threefold. (1.) To obviate by frictions, and well-regulated gymnastic movements, the atrophy, as far as it depended upon inaction and impaired circulation. (2.) To stimulate separately the activity of the spinal marrow, and of the nerves of the lower extremities, by a gentle current or slight shocks. This was effected as regards the medulla, by passing a long needle between two of the vertebræ at the upper part of the spine, and another between two at the lower, and bringing them into inter-communication with each other and the pile, connecting the positive pole with the upper needle. For the limbs, a greater number of needles were passed into the substance of the muscles. (3.) To bring the respective parts into a unison of action, by directing shocks rather than a current from the spine towards the limbs, previously connected by needles, he commenced with a very feeble action, produced by a few pairs of plates, adding to the conducting fluid strong infusion of arnica and valerian; and as he desired an increase of activity, augmenting the number of plates, and adding vinegar to the infusions, until he reached fifty pairs of large plates. When the electricity was employed in the form of a gentle current, the sittings lasted forty minutes, but when shocks were

arrived at, only thirty minutes; and at every sixth or seventh day, a day or two of rest was allowed. It is a painful procedure; but the girl, full of courage, bore it well, and was rewarded by a perfect cure. The steps are too long to detail; but we may state that, after forty days, the treatment was suspended (though great improvement had been achieved) on account of the coldness of the season, to be resumed again in the summer; when, after twenty five other applications, the cure became complete.

The *second* case was one of very recent *hemiplegia*, occurring in a man æt. 35, a subject of pellagra. He was treated for a supposed hyperæmia of the cerebro-spinal axis without benefit, and then submitted to Wollaston's pile for about a month, which sufficed for his complete restoration. This case confirmed Professor Mariannini's view of the great efficacy of electro-acupuncture as a means of acting on the *morale* of the patient; for the man, previously in deep despondency, now conceived the highest hopes of cure, which doubtless co-operated in its production. The third case was one of *facial paralysis*, coming on in a man (æt. 30) given to venery, and preceded by disturbance in the head. After antiphlogistics and derivatives had been tried in vain, the conductor from the positive pole was brought in contact with the skin, sometimes at the angle of the jaw, and sometimes at the external meatus; that attached to the negative pole, sharpened into a fine point, being carried in the direction of the paralysed muscles. Slight but frequent shocks were thus transmitted, during half an hour, for fifteen days, soon after which all traces of the disease disappeared.

A case is detailed to show the efficacy of electricity in *constipation from intestinal paresis*. It occurred in the person of a lad (æt. 11), who also suffered from glossoplegia, and a paralysis of nearly all the voluntary muscles of the trunk and limbs. Defæcation was sometimes involuntary, and at others only producible by violent drastics. In spite of the best treatment, the paralysis had been stationary for some years. When the author saw him, he had not had a stool for fifteen days, and all purgatives were vomited and clysters returned. With the view of exciting the suspended peristaltic movements, the conductor from the positive pole of a pile was brought in contact with the tongue, and that from the negative, previously covered with a thin piece of cloth, carried into the rectum. The patient could not tolerate the sensation in the rectum until the pairs of plates had been reduced to eight, when a current was passed in for twenty minutes. Very obvious movements were induced in the abdomen, and were followed by pains, but no stools. Repeating the galvanism next day, very severe pains were excited in ten minutes; and by the aid of a clyster, an abundant discharge of fæces procured.

Besides the above, he relates four cases of *hemiplegia, with glossoplegia*, in which great amelioration was produced, but not a cure, in consequence, apparently, of an insufficiently long perseverance on the part of the patient. In two other cases of *hemiplegia*, no amelioration resulted. In both, the paralysis followed severe attacks of apoplexy: and the author's experience agrees with that of others, in demonstrat-

ing that, when the brain has been seriously and primarily compromised, and the use of electricity long delayed, the progressive improvement and complete cure obtainable in other cases is never to be expected.

A case of *bronchocele* was likewise successfully treated by electro-acupuncture. The number of plates employed amounted to from sixteen to twenty, and upon the intervening discs of cloth, moistened in an acid or saline solution, a little *tinct. of iodine* was dropped. The tumour at first became painful, and increased in size, but soon after diminished. In two cases of *nervous amaurosis*, he tried the effects of continuous currents, as recommended by Professor Finella, but with no conclusive results.

Art. 35.—*Therapeutic Value and Pharmaceutical Preparations of Manganese.* By M. Hannon.

(*Revue Médico-Chirurgicale*, Juin 1849.)

[M. Hannon has ascertained that manganese possesses many of the properties of the ferruginous preparations, and may be used with advantage in the same class of diseases for which iron is commonly prescribed. In simple anæmia he has thought that it acts even more quickly, and the persistence of the benefit is supposed to be more durable. The various methods of prescribing the medicine are given below.]

Oxide of Manganese.—This should be always prepared in the moist way, and should therefore only be prepared as required. The best mode of prescribing it is to add to one ounce of simple syrup one drachm of the hydrated oxide, with some oily emulsion, to prevent contact of the air.

Carbonate of Manganese is prepared by dissolving seventeen ounces of chrystallized sulphate of manganese, and nineteen ounces of carbonate of soda in a sufficient quantity of water. Double decomposition takes place; an ounce of syrup is added to every seventeen ounces of the solution, placed in a stoppered bottle, and the precipitate allowed to settle. The supernatant fluid is then decanted, the precipitate washed, evaporated, mixed with honey, and again inspissated to a proper consistence for pills. The dose is from four to ten pills of four grains each, per diem.

Neutral Malate of Manganese.—This is procured by treating carbonate of manganese with malic acid. It is an eligible preparation, as the base of the salt is in the form of protoxide, and the acid is easily digested. The dose is from two to four grains, in pills.

The preparations of manganese have this immense advantage over those of iron, that they can be combined with vegetable tonics and astringents, namely, tannin, and the substances which contain it, as gall-nuts, rhatany, catechu, dragon's blood, kino, monesia, canella, and cinchona. These can all be combined with malate of manganese. *Syrup of malate of manganese* consists of, simple syrup ℥xvj; malate of manganese ℥i; essence of lemon ℥ij: an ounce of syrup contains twenty-nine grains of malate of manganese. *Pills of malate of man-*

ganese. Malate of manganese gr. xv; powder of cinchona gr. xv; honey, a sufficient quantity to make twenty pills. *Lozenges of malate of manganese.* Malate of manganese ℥i; sugar ℥xj; mucilage of tragacanth a sufficient quantity. To be formed into lozenges, each twelve grains in weight; each of which contains a grain of salt.

Tartrate of Manganese is prepared in the same way as the malate, tartaric acid being used. It may be substituted for the malate in all the above-mentioned formulæ; and is used to prepare the following highly tonic syrup. Syrup of tolu ℥xvij; extract of rhatany ℥ijss; tartrate of manganese ℥ijss. Dose, from four to five spoonfuls daily.

Phosphate of Manganese is best prepared by dropping a solution of phosphate of soda into a solution of sulphate of manganese. The precipitate is collected after filtration, dried, and preserved in well-stopped bottles. This preparation may be employed, like the phosphate of iron, in cancerous affections. *Pills of Phosphate of Manganese.* Phosphate of manganese ℥iss; powder of cinchona ℥iss; syrup of catechu a sufficient quantity. To be divided into four-grain pills. *Syrup of Phosphate of Manganese.* Phosphate of manganese ℥ss; syrup of tolu ℥iij, ℥iij; syrup of cinchona ℥v; essence of lemon ℥iss; powder of tragacanth gr. x. This preparation must be made quickly, and preserved in a well-stopped bottle. *Lozenges of Phosphate of Manganese.* Phosphate of manganese ℥j; sugar ℥xij. Mix and divide into twelve-grain lozenges, each containing one grain of the phosphate.

Iodide of Manganese is prepared by digesting recently precipitated carbonate of manganese with fresh hydriodic acid; then filtering and evaporating, the access of air being prevented. It may more conveniently be prepared extemporaneously, by mixing together an ounce of iodide of potassium, and the same quantity of sulphate of manganese, perfectly dried, and in the state of powder. It is then made into a pill-mass with honey, and divided into pills, each containing four grains of the iodide which should be kept in a well-stopped bottle. The dose is at first, one pill daily, gradually increased every three days, to six pills; the medicine is then omitted for eight days, after which it is resumed. *Syrup of Iodide of Manganese* is prepared by adding concentrated hydriodic acid to a drachm of perfectly pure hydrated carbonate of manganese, until it be entirely dissolved; then mixing with the solution seventeen ounces of a syrup of guaiacum and sarsaparilla. Doses, from two to six spoonfuls daily.

In cases where iron has not succeeded, it is desirable not to make a sudden transition to manganese, but to combine the two remedies, as in the following formulæ. Pure crystallized sulphate of iron ℥xiij; pure sulphate of manganese ℥iijss; pure carbonate of soda ℥xvijss; honey ℥x; syrup, as much as may be sufficient to make a mass, to be divided into four-grain pills. Dose, from two to ten pills daily. The insoluble preparations of manganese should be first used, as the carbonate, phosphate, and oxide; then the more soluble preparations, the tartrate, malate, &c., may be employed. The use of this medicine should not be persevered in so long as that of iron, as its preparations are more rapidly assimilated. Manganese is not, like iron, found in the excrements of persons who take it—at least it is in very small quantity.

Art. 36.—*Medical uses of Turpentine.*—Dr. Thomas Smith has furnished a paper on the therapeutic value of terebinthinate medicines, from which we may glean some useful information.

As a *counter-irritant* it is rapid and safe; and, according to the author, never produces strangury.

As a *vermifuge* it is well known. As a *purgative* it should not be given alone, especially in cold weather, as it tends, under such circumstances, like other hydro-carbons, to supply fuel for the evolution of animal heat, rather than to exhibit any therapeutic property. The dose, according to the author, should never exceed half an ounce at a time, and to insure its aperient effect should be combined with castor oil, or some other purgative. As an *astringent*, in doses of from twenty to fifty minims every four hours, turpentine is, in the author's estimation, one of the most efficient medicines we possess.

Several diseases are enumerated in which the author has found turpentine efficacious, and numerous cases are given in illustration. Among these are cases of the various hemorrhages, epistaxis, hematemesis, purpura henorrhagica, &c. While speaking of hæmoptisis, the author expresses his opinion that in phthisis benefit might be derived from the inhalation of turpentine, and ascribes the success once attributed to tar vapours, to the latter containing volatile principles analogous to those of turpentine.

The medicine is also extolled in rheumatism, flatulence, worms, puerperal convulsions, and in hooping cough. [For an excellent account of its value in certain stages of fever, the reader may advantageously consult one of our preceding volumes (vol. viii., p. 5).]

London Journal of Medicine, April 1850.

Art. 37.—*Experiments with the Brayera Anthelmintica for the Removal of Tænia Solium.*—The three cases, of which we give an outline below, occurred under the care of Dr. Budd, who had determined on giving the Kousso, or Brayera anthelmintica, (a plant of the natural order Rosaceæ,) a trial, having often found ineffectual the remedies in common use, as turpentine, pomegranate bark, &c., which create disgust in the patient, as well as, in some cases, severe constitutional symptoms. This plant, as long ago as the beginning of the year 1847, had been brought under the notice of the Academy of Medicine, at Paris, who appointed a committee to inquire as to its properties. It was in consequence tried, under their direction, in several hospitals, and the result of their experience was such, that they were induced to return a very favorable report. The Academy of Sciences were equally satisfied of its efficacy.

The parts of the plants used are the flowers, which, being reduced to a fine powder, are macerated in lukewarm water for fifteen minutes. The powder and solution are taken either in one, two, or three doses, quickly following each other. It is recommended that lemon-juice should be taken freely before and after the kousso. The patient must be prepared by low diet for a day previously, and the medicine taken on an empty stomach before breakfast. The clear infusion has

the colour, and a somewhat similar taste, to a very weak senna tea. It rarely causes any annoyance or uneasiness, except a slight nausea, and this but seldom.

The first woman to whom the kousso was given had generally enjoyed good health. From her account, it is probable that she had not been troubled with tapeworm previous to her coming to London, a year and a half ago. When the first symptoms of it came on, twelve months since, she took oil of turpentine and castor oil, under the use of which a large portion of tænia passed. She had at first a ravenous appetite, which passed away, leaving a constant feeling of flatulency in the stomach. Languor, general debility, incapacity for work, and nausea, were her chief symptoms. During the four months preceding her admission, she was constantly taking various remedies, such as turpentine, &c., under the direction of her medical attendant; but with none of them has the worm passed. When admitted into the hospital she was ordered half a drachm of jalap and low diet, and subsequently other purges, but without bringing away any joints of the worm for four days, when the kousso was administered on an empty stomach, which in the course of the day brought away a large worm. Its head could not be detected, but the narrow portions which seemed to have been joined to it came away. During the same and following day, there was considerable diuresis, but afterwards the urine became scanty. The motions were loose and dark. Her general state improved, and she left the hospital apparently cured.

The next patient was also a woman, æt. about 44, who had apparently got the worm at Fort Beaufort, in the Cape of Good Hope, at which place she resided for some time. She began to pass joints on the year following that on which she went to that place. Worms are very common among the natives, who are in the habit of taking infusion of pomegranate bark, turpentine, and also a scraped root, called "Cacay." Of all the remedies which she has used, the pomegranate was the most effectual, which has not however cured her, as she continues to pass joints. Her symptoms are gnawing pain, and constant feeling of sinking in the epigastrium, pain in limbs, general lassitude, dimness of sight, loss of appetite, short dry cough, and a sensation as of the movement of the tænia. She took kousso as the other patient; it was followed by slight nausea for a quarter of an hour. Its taste, she says, is very much like pomegranate. A tapeworm, of very large size, was passed four hours and a half afterwards, and subsequently some isolated joints. The head could not be found; but there is no doubt that it came away, on account of the narrowness of some of the pieces. During the same and two following days, numerous joints, apparently long dead and partially decayed, were passed.

The other was a delicate, anæmic-looking woman, who had had the usual symptoms of tapeworm for some time; but did not, to her knowledge, pass any until three weeks, and again one week ago. Is a native of Norfolk; but has latterly resided in Soho, which neighbourhood is supplied with water by the New River Company. She had the kousso exhibited in the same way, followed by a dose of carbonate

and sulphate of magnesia. A portion of worm passed with every motion. Both these patients have left the hospital improved in health, and apparently free from any symptom of tænia.

Medical Times, April 20.

ART. 38.—*Belladonna, Therapeutic Value of, in Nervous Affections.*—M. DEBREQUE has published the result of his experience with belladonna in various nervous diseases, as hooping-cough, epilepsy, hysteria, neuralgia, &c.

In *hooping-cough* it has been particularly useful, but success was found to be dependent upon certain rules with respect to its exhibition. The dose should be regulated by the age of the child, and continued, upon an average, for twelve days. For instance, in the case of a child three years old, he gives the following formula: powder of the root of belladonna, two grammes (thirty grains), to be divided into twelve powders, one of which is to be given daily in three equal parts. The dose is thus three fifths of a grain. This medicine is not to be given until the inflammatory stage has passed, that is, before the tenth to the fifteenth day.

In *epilepsy*, in young subjects, connected with worms, M. Debreque combines some vermifuge with belladonna. In *hysteria*, he combines camphor and assafœtida.

In *neuralgia*, the author appears to rely mainly on the external use of belladonna, in the following form: extract of belladonna and lard, of each twelve grammes, opium two grammes; a portion to be rubbed over the painful part three times a day. We need hardly say that British practitioners are perfectly familiar with this treatment, but they have not met with the success boasted of by M. Debreque.

The author further details his use of belladonna in convulsive cough, in spasmodic stricture, paraphymosis, and strangulated hernia. When given internally, in these cases, his formula is as follows: extract of belladonna, eight grammes; powdered pure acacia, two grammes; to be made into one hundred and twenty pills with some inert powder; one pill the first day, two the second, gradually increased to six a day, unless disturbed vision should occur.

Journal de Médecine et de Chirurgie Pratique, Feb. 1850.

ART. 39.—*On the Use of Gallic Acid in Albuminous Urine.*

By GEORGE SAMPSON, F.R.C.S.

(*Lancet*, Dec. 1, 1849.)

[Mr. Sampson places great confidence in the use of gallic acid in cases of albuminuria, and considers, from the gratifying results which he has experienced, that the profession should be made acquainted with some of the examples of this mode of treatment. He therefore places the following cases on record.]

CASE I.—A gentleman, æt. 77, of ruddy complexion and good constitution, came to me in April last, complaining of debility,

accompanied with frequent and painful micturition, which often interrupted his sleep every half hour during the night. The pain was principally referred to the neck of the bladder, and along the urethra, and he had only occasional uneasiness in the region of the kidneys. The act of expelling the urine was always attended with very severe pain, and was followed by a sensation of something still remaining in the bladder. The urine in the morning was neutral, and its specific gravity 1·011, in the evening it was slightly acid, and the specific gravity 1·013, but it was always highly albuminous, and became offensive in a few hours after being passed. He had been for many months under the judicious treatment of an experienced surgeon, who had sounded the bladder, and ascertained that the middle lobe of the prostate was enlarged.

The first remedy which I suggested was a suppository of opium and hemlock. This was used for a fortnight or three weeks with some relief of pain, but with no other benefit, and it then occurred to me that as gallic acid has the property of speedily arresting the escape of blood-corpuscles in hemorrhage from various structures, it possibly might, if given in large and frequently-repeated doses, check the loss of albumen from the blood through the kidneys.

Accordingly, on the 14th of May, I recommended him to take ten grains of gallic acid in infusion of orange peel every six hours. This he continued to do till the 3d of June, by which time the specific gravity of the urine had increased to 1·017 in the morning, and 1·019 in the evening; it had also become moderately acid, and decidedly less albuminous. The bladder was also so much less irritable that the patient could retain his water for a period of four and even five hours; the pain had greatly diminished, he felt stronger, and his appetite had improved. The acid, for some reason, was then omitted for eight or ten days, but the pain again increased, although the quantity of opium in the suppository had been augmented. The patient was therefore requested to resume the acid, which he did, and persevered in taking it until the middle of August, during which time his symptoms progressively improved, and he declared that he felt himself well. At that time the urine was acid, of a deep straw colour, with only the faintest possible trace of albumen, and its specific gravity was 1·019 in the morning, and 1·020 in the evening. Circumstances prevented my seeing this patient again till very recently, when I learnt that he had suffered from a severe attack of diarrhœa, which had reduced his strength, and brought back many of his old symptoms. The urine, however, even under this disadvantage, is, at the time I write, less albuminous than when I saw him first, and I confidently expect he will quickly improve again under the use of the gallic acid.

Case II.—A girl, about 14, in whom menstruation had not taken place, had complained for more than twelve months of acute and forcing pain whenever the bladder was relieved, which happened every hour, and sometimes oftener. She was plump, with full puffy cheeks, but she had the anxious countenance of a patient suffering from calculus. Exercise always distressed her, and she stooped when walking, as if to relieve the bladder from abdominal pressure. Under these suspicious symptoms I passed, on the 2d of May, a sound, but

the bladder was empty; I therefore recommended an opiate suppository, and gave her in succession the citrate of ammonia, diosma crenata, quinine, and opium, the mineral acids, &c., but with very trifling benefit. An eminent physician whom she consulted recommended steel, which she took for a time, but this soon disagreed, as several of the other medicines which she had hitherto tried had done. Some relief, however, was experienced from a slight appearance of the catamenial discharge, but in a week or two the distressing symptoms before complained of returned as severely as before. At that time, the 10th of July, the specific gravity of the urine was 1·010 in the morning, and 1·013 in the evening; the urine was loaded with albumen, it was alkaline, and became extremely offensive in a very few hours. After standing for a short time it threw down a heavy sediment of muco-purulent matter, leaving a stratum at the upper surface of the fluid of a pink colour, from the presence of blood-corpuscles.

Under these circumstances, I determined to administer the gallic acid in ten-grain doses three or four times a day, combined with a few drops of the sedative solution of opium, as the pain was severe, and she would no longer consent to use a suppository or injection. The good effect of the medicine was soon visible, in causing a diminution of pain and irritability of the bladder: by the 10th of August the blood-corpuscles had disappeared, the urine was clearer, and much less disposed to become offensive. The appetite of the patient was improved, she slept well, and was not disturbed by the action of the bladder more than four or five times in the night. At this stage of the treatment she went to the seaside, but has continued the use of the gallic acid up to the present time. The urine is now moderately acid, not at all offensive, even on the third day after being passed, and its specific gravity is 1·011 in the morning and 1·015 in the evening. It is still albuminous, but much less so than at any former period of her illness. On examining the urine by the microscope, the pus globules are found to be reduced to about one fourth of the quantity present at the time she commenced the use of the gallic acid, and the sediment of the urine has diminished in the same proportion. She can now walk a mile, and even run, without inconvenience; her spirits and appetite are good; and the amendment, which has been progressive for the last four months, is still going on, but there has been no recurrence of the catamenia.

Case III.—A young woman, æt. 22, pale, œdematous, and extremely debilitated, came to me on account of frequent fainting fits and palpitation. She had no acute pain, but rather an aching sensation in the back and down the legs, from which she had suffered more or less for about two months. The urine was acid, turbid, and red, from the presence of blood-corpuscles; it was albuminous, and the specific gravity was 1·022. As these symptoms indicated a congested state of the kidney, I advised her to be cupped on the loins, to take the compound ipecacuanha powder with calomel, and afterwards the gallic acid. The first-named remedies, however, were neglected, and the acid only was taken, in doses of ten grains, three times a day for a week, when, instead of finding all the symptoms aggravated, as might

have been expected, the only apparent alteration was, that the water had become clear, and the blood-corpuscles had altogether disappeared. This patient did not again call upon me, so that I cannot give any further history of the case; but I have related it so far, for the purpose of showing the action of the gallic acid under different circumstances.

Case iv.—On the 29th of June last, I was called to see a gentleman, 76 years of age, who was suffering from excessive weakness and loss of appetite, unaccompanied, however, by pain. He had always been pale, but his appearance then was perfectly anæmiated; his legs were œdematous; he had frequent calls to relieve the bladder; and although some weeks previously the urine had been double the usual amount, it was then moderate in quantity, and entirely colourless; its specific gravity in the morning was 1·008, slightly acid, and highly albuminous. The patient had been gradually declining into this state of health for three or four months, and, regarding it as a natural decay of constitutional power, he reluctantly consented to try the gallic acid for two or three weeks before leaving town. At the expiration of that period, during which he took one drachm of the acid every twenty-four hours, his appearance was more healthy; his appetite had rather improved; micturition was less frequent, and the urine moderately acid; it was of a deep straw colour, and its specific gravity had risen to 1·014 in the morning, and 1·017 in the evening, and it contained less albumen. The patient now returned to the country, and I heard nothing more of him until a fortnight since, when he wrote to me to say he had steadily persevered in taking the gallic acid up to the present time; that at first he mended slowly, and with frequent fluctuations, but afterwards his progress became more steady. He concluded his letter by saying—"The water is now of a healthy colour, and the bladder is in perfectly good order. The gallic acid seems to have improved my constitution, for instead of taking aperient pills frequently, which for years past I have required, I have not now taken one for months."

Remarks.—I do not presume to draw any general conclusion from so small a number of cases, but perhaps I may be allowed to remark, that during several years I have prescribed gallic acid in a variety of cases, and it has always appeared to me that it has been usually given in too small doses, or has not been repeated often enough, to elicit its full powers. There is really no ground for a timid use of it, for, if pure, it does not disagree with the primæ viæ, but, on the contrary, I have often found it to be of great advantage in imperfect digestion, arising from a relaxed condition of the stomach. I have never known it to cause headache, except in one instance, where the patient took, by mistake, nearly thirty grains at one dose. It has no constipating effect; nor, indeed, can I name any disagreeable effects arising from its use, except where the bronchial membrane is extremely irritable, in which cases it should be given cautiously, or it may cause a sense of oppression at the chest. I will not add to the length of this communication by any theoretical remarks on the action of gallic acid as a medicine, but I may observe, that as it can be detected in the urine a few hours after it has been taken, I made a trial of it a few days

since in a case of gonorrhœa. The disease was of eight days' standing and the patient took one drachm every twenty-four hours, in twelve-grain doses; in four days the discharge was changed from a thick consistence, and yellow colour, to the smallest possible quantity of colourless gleet, when, having exhausted his supply of gallic acid, he took four or five copaiba capsules, which completed the cure. This may have been a peculiarly fortunate case; but, at all events, such a remedy appears to deserve a further trial.

ART. 40.—*On the Use of Tannin in various Diseases.* By Dr. ALISON.

(*London Journal of Medicine*, Jan. 1850.)

[The author states that he has, for six years, continually prescribed tannin in various diseases, and has found it extremely efficacious. His remarks are arranged under the following heads:

1. History and property of tannin. 2. Its physiological and therapeutical effects. 3. Mode of administration.

The first of these we omit; on the next division of his subject the author observes:]

2. *Physiological and Therapeutical Effects of Tannic Acid.*—As an astringent, I have found tannic acid exceedingly efficacious, certainly as much so as any other agent, vegetable or mineral, that I have ever employed. It has equalled the salts of lead, copper, and zinc, without producing any of those poisonous effects which are liable to follow the free use of the salts of the first two metals.

Internal Use.—In the *chronic bronchial catarrh* of weakly and elderly persons, unconnected with disease of the heart or great blood-vessels, and attended with copious and debilitating expectoration, the administration of tannic acid by the mouth, in doses of one, two, and three grains, two or three times daily, has greatly and gradually abated the secretion, relieved the frequent cough, and improved the strength of the patient. In the second stage of *pulmonary consumption*—viz., that of softening, when bronchial catarrh has been present to a large extent, weakening the patient, causing frequent cough, and disturbing sleep, the same results have followed, and have greatly contributed to the comfort and welfare of the sufferer. But in pulmonary disease, the greatest amount of benefit has obviously been derived when large cavities have been present in the lungs, the walls of which have thrown out large quantities of purulent matter, occasionally mixed with blood. In such cases the discharge has been effectually controlled, and the rate of tear and wear of the system obviously restrained, without the induction of oppression or other evils.

In *chronic diarrhœa*, which had resisted the ordinary treatment by chalk, opium, and regulated diet, and was not dependent on obstructive disease of the heart or liver, tannic acid, in a solid form, has proved of surprising efficacy. In cases of severe disease, depending on an irritable weakly mucous membrane, I have not known of one failure; and of those examples connected with chronic inflammation and disorganization of the mucous membrane, only two proved beyond the influence of this remedy. These two cases occurred during the last

autumn, while cholera was prevalent, and the disease of the mucous membrane was extensive. The complaint, in one of the examples, was of long standing, and the patient had been addicted to habits of intemperance. But it was not tannic acid only that failed; the salts of copper, iron, lead, and zinc, in large doses, proved to be of no more avail. In this form of disease, tannic acid was administered in the form of pill, in combination with opium.

In *leucorrhœa*, unconnected with inflammatory action, I have found tannic acid efficacious in restraining the discharge, and in increasing the strength of the patient. The aqueous solution, combined with a small proportion of dilute nitric acid, was the form usually employed in these examples of disease. In *menorrhagia*, not dependent on a plethoric state of the system, or on local congestion, it was also serviceable, administered in the same form.

The excessive *sweating in phthisis*, and in other diseases running on to a fatal termination, has been usefully restrained by the use of tannic acid, combined with dilute nitric acid; and the habitual cold damp upon the skin of soft, weakly constitutions, has been corrected by the same means. I have had no opportunity of testing the virtues of this remedy in the *hemorrhagic diathesis*; but I am strongly disposed to believe they would be found very considerable, conjoined with other suitable means. I believe it would prove serviceably in *albuminuria*, dependent on chronic disorganization of the kidney, and not associated with obstructive disease. When the egress of albumen results, as I believe it often does in no small degree, from reduced tone and elasticity in the organ, and is not (as in a great majority of cases) a wholesome outlet necessary for the relief of the circulation, tannic acid offers the promise of benefit. Such a case, however, I have not lately met with, and consequently have not had an opportunity of testing the treatment.

Local Application.—In the form of aqueous solution, used as a gargle, tannic acid has been most useful in correcting relaxation of the throat. Sponginess and hemorrhage of the gums have been greatly controlled by a lotion of tannic acid, and by the application of the dry powder. By this means loose teeth may be retained for a time, and the impediment to articulation thereby prevented, which would result from their removal.

In *prolapsus ani* I have prescribed tannic acid, dissolved in water, as an injection. This remedy is particularly indicated when the disease is associated with great relaxation of the solids. Applied to *hemorrhoidal tumours*, free from inflammation, in the form of a fine powder, mixed with lard, it would doubtless prove more efficacious than galls, the usual remedy. It is assuredly due to the tannic acid which it contains, that uva ursi proves serviceable in *catarrhus vesicæ*.

In *gonorrhœa*, chronic or about to become such, tannic acid, applied externally as a lotion, has proved serviceable. In the latter mode it has induced no smarting, although the parts have been tender, and though it has been applied with little intermission for several days. It is as a *local* astringent that tannic acid produces the most obvious effects, as Dr. Garrod has remarked.

Of tannic acid as an astringent, I have merely further to say, that

it is of special excellence as an external application to the skin, when such a remedy is required. I have found it of extraordinary efficacy when reduced to a fine powder, mixed with lard, and applied to the skin. The parts soon acquire a healthy aspect; very little of the smarting or pungency is experienced, which so generally results from the use of the salts of alumina, lead, zinc, or copper. I have found it far superior to gallic acid. By way of testing their comparative powers, I lately applied an ointment of gallic acid to one spot of psoriasis, and one of tannic acid to another. The strength of both was the same. The spots were of old date, and had resisted much treatment. In the course of two days, the spot to which tannic acid had been applied was all but healthy; that for which gallic acid had been similarly employed was more inflamed than before. The gallic acid had caused smarting, and brought away the protecting scales. This treatment was adopted merely to test the comparative powers of the two acids, and not as curative practice. Astringents, if they be applied in psoriasis, must be used only as subsidiary to other treatment.

As a peptic, tannic acid is very efficacious. This I soon found, while employing it as a pure astringent. Symptoms of dyspepsia disappeared under its use; the appetite increased, flatus and sense of distension were abated at the same time; and in several instances the bowels, far from becoming constipated, acquiring a more healthy tone, actually became more free. A lady affected with phthisis, who has been under my care for three years, during which time she has taken tannic acid alternately with cod-liver oil, complained very lately of loss of appetite while taking the oil. The morning dose of the oil was replaced by tannic acid, combined with dilute nitric acid, and the result was a very striking restoration of the appetite. With such obvious improvement in the condition and action of the stomach, it is reasonable to believe that one of the results is the formation of a more perfect chyle. The action as a peptic is in accordance with the statement of one of the best writers on materia medica. Dr. Pereira says: "Administered in moderate doses, they (astringents) promote the appetite, assist digestion," &c.

As a histogenetic, in promoting the *genesis*, and in *improving the quality of the blood*, tannic acid, it may be inferred from what has been stated above, would probably prove effective; but that it is really so, I have the evidence of improved complexion, greater fulness of the blood-vessels, increase of strength, buoyancy of spirits, and improved secretions, in numerous examples of anæmic and other diseases, in which this agent has been long employed.

The *formation of structures in the young*, I have reason to believe, is subserved, to a valuable extent, by the long-continued administration of tannic acid, in moderate doses. It is nearly six years since I began to prescribe this remedy in cases of curvature of the bones in children, with soft shafts and enlarged epiphyses. The number of cases placed under this treatment, while I was physician to the Northern Dispensary, was considerable, and not a few occurring in private practice were similarly treated. The general health was improved in all. The secretions, in many cases exceedingly offensive, were greatly corrected. In the course of a year or two, an obvious improvement in the shape

and form of the bones was manifest. The curve was reduced, and the heads of the bones had lost no small amount of their disproportionate prominence. I have lately seen two or three children, presenting no appearance of having suffered from this affection of the bones, who some years ago really were deformed, and who were put under the influence of tannic acid, and also, it is true, of suitable regimen. In most of these examples of disease, when they came under my care, the urine contained an undue proportion of lime. This continued to be the case, at least for some time, even under the use of tannic acid, though perhaps not to the same extent. If tannic acid really possesses the power of correcting the tendency to rickets, or of staying the progress of this affection, it cannot be through any astringent action on the kidney arresting the exit of an undue quantity of lime, which is only a sign or consequence of the disease, and not its cause. It must act by invigorating the general health, and by imparting a more healthy character to the formative processes, by virtue of which lime and other mineral ingredients in the blood are more forcibly attracted to, and fixed in, the osseous structure. Further evidence of the power of tannic acid to improve the formation of tissues has been afforded by the increase in the volume and firmness of the soft parts of children placed under its operation, which I have frequently observed.

As a nervine of a lasting character, I have found tannic acid useful in several cases of nervous debility, languor, and excitability. These distressing conditions have been relieved; and the benefit, in one or two examples, has been permanent. Under the use of moderate doses of this medicine, I have known even the symptoms of weakly organization,—or, as I have thought, of impending softening of the brain, such as flightiness of speech and manner, impatience of attention or of application, hasty judgments, weakness and unstable gait,—to lose not a little of their prominence. It has always, however, been my object to guard against depending on this or any other such remedy where there has been good reason to suspect the presence of inflammatory action, even in a subdued form. When thus used as a nervine, tannic acid should generally be combined with camphor, hops, or hyoscyamus. The shower-bath has been employed, and the secretions have been attended to, at the same time. Thus exhibited, I believe that tannic acid, by improving the natural galvanic battery, if our brain and nerves may be so figuratively designated, will really, in many cases of feeble volition and muscular action, produce not a little of that benefit which has been sanguinely looked for from galvanism and electricity, and which, when obtained, has been so fleeting—at least in my experience.

3. *Mode of Administration of Tannic Acid.*—For administration, tannic acid is well suited. It possesses no great bitterness, is free from odour, and does not induce nausea. A little sugar or syrup will suffice to cover all unpleasantness. It is perfectly safe, and may be continued for months without any evil effect; in moderate doses, it does not reduce the secretions below the healthy standard. It may be administered at all hours, before, or during, or after meals.

Tannic acid may be employed alone in the treatment of disease, but it is capable of exercising its virtues harmoniously with other remedies.

The use of this medicine does not preclude the employment of iron, cod-liver oil, and other such means; but on the contrary, I believe it will make them more available to the patient. It may be given at one time of the day, and the other remedies at another; or a week or a fortnight may be given alternately to each medicine. Tannic acid, moreover, may be advantageously combined at the same moment with other means; it may be prepared with bitters and aromatics, or conjoined with astringent wines.

For diseases of the mouth, tannic acid may be dissolved in water; three or four grains to the ounce of water make a strong styptic lotion. It may be reduced to a fine powder, and dusted over the parts. Mr. Morson has prepared a lozenge, which is well adapted for the mouth and throat. Each lozenge contains about half a grain of tannic acid. Some have had added to them essence of cayenne, the more to fit them for relaxation of the fauces and glottis. For the stomach, the aqueous solution is well adapted; and when a pure bitter is required, some infusion, such as that of gentian, may be used instead of water. When it is intended to influence the bowels, tannic acid is suitably exhibited in the form of pill; and as circumstances indicate, in combination with opium or other remedies. If we desire it to enter the circulation, or to act quickly, at a distance from the stomach, on some internal part, the form of solution or powder should be employed. As a styptic for the rectum, uterus, vagina, or urethra, the aqueous solution, used as an injection, will generally prove most serviceable. For local skin diseases, requiring an astringent, tannic acid may be advantageously used, either as a lotion, or in the form of ointment. As, however, the application is really effective, it will be well to attend, at the same time, to any requirements that the general system may demand. Reduced to a very fine powder, I have found that tannic acid may be inhaled into the lungs and air-tubes. It has produced no irritation or cough when tolerably well managed. I have not had much experience of it in this form; but I believe that a cautious trial might be made of it in cases of disease of the lungs and air-tubes, in which the local application of a non-irritant styptic is indicated.

The dose of pure tannic acid must vary according to the circumstances under which it is employed. For urgent disease, such as hemorrhage from the stomach, bowels, or lungs, five to ten grains should be used every few hours. For chronic fluxes, wherever situated, two or three grains, given twice a day, will generally suffice. When the general improvement of the health is simply desiderated, one or two grains, two or three times daily, are enough, but the remedy should be long continued. For children afflicted with rickets, half a grain to one grain answers well, given night and morning.

Tannic acid is contra-indicated in hemorrhages and fluxes, wherever situated, which are only the relieving of an obstructed circulation, or of inflammatory or congestive action. It is, under such circumstances, calculated to do mischief. In obstinate constipation of the bowels, when circumstances render a lax state necessary, tannic acid is contra-indicated in large doses, as a general rule. Irritability of stomach and gastritis are liable to be aggravated by tannic acid.

Several preparations of tannic acid have been carefully prepared,

at my suggestion, by Mr. Morson, the eminent pharmaceutist, of Southampton-row. These preparations are the tannates of quinine, cinchonine, alumina, bismuth, and lead. They are all coloured, possess more or less the styptic taste of tannic acid, and are inodorous. I have not had time to make sufficient trial of them, so as to be enabled to report at present upon their virtues. I shall now only hazard an opinion that they, as well as tannic acid itself, will be found, upon full trial, to possess very considerable power, and to form valuable acquisitions to the resources of the physician, wherewith he may render himself more formidable to disease, and still more serviceable to the sick.

Art. 41.—*Effects of the Vichy Mineral Waters on the Urine.* By M. Durand-Fardel.—[The reputation of the Vichy waters as a remedy in calculous affections, has been connected with their supposed property of rendering the urine alkaline. M. Durand-Fardel has examined the reaction of the urine in eighty-seven patients whilst under treatment at Vichy, with a view to ascertain what the real effect on the acidity of the urine is. The patients were taking daily a bath, a great number of douches, and from five to seven glasses of the water, each glass containing about seven ounces. The following are his results:]

One of the most ordinary effects of the treatment is to remove the natural acidity of the urine, and render it neutral or alkaline. Only in about one third of the cases is the alkalinity marked and persistent. In the greater number it is neutral or feebly alkaline, and the degree of the alkalinity varies from day to day.

In a few rare cases the urine remains acid during the whole treatment.

It is in general difficult to appreciate the circumstances which cause variations in the acidity or alkalinity of the urine. The supervention of diarrhœa generally renders the alkalised urine acid, but sometimes only diminishes the degree of alkalinity. The act of digestion sometimes temporarily diminished the alkalinity. The particular diet of the patient seems to have less effect than the constitutional predisposition, in modifying these states of the urine.

In two cases of uric acid gravel, amelioration was effected, though the urine remained acid during the whole course of treatment.

It appears from all that M. D.-F. has observed, that the degree of alkalinity of the urine, is not in direct proportion either to the dose of the waters, the nature of the disease, or the results of the treatment; that consequently it cannot, as has been supposed, serve as a guide in determining to what extent the waters should be used.

Gazette des Hôpitaux, Jan. 19, 1850.

Art. 42.—*Formulæ for the External Use of Glycerine.*—Mr. Startin furnishes the following useful formulæ for superficial burns, scalds, or excoriations: intertrigo, chaps of the lips, herpes labiorum, &c.:

℞ Gum tragac. pur. ℥ij. ad. ℨss;
Liq. calcis, ℨiv;
Glycerine purif. ℨj;
Aq. rosæ dest. ℨiij;

to form a soft jelly, to be used by way of ointment or embrocation.

For prurigo, lichen, strophulus, lepra, psoriasis, pruritus, &c.:

℞ Acid. nitric. dil. ℥ss ad. ℥j;
Bismuth. trisnitr. ℥ss;
Tinc. digitalis, ℥j;
Glycerine purif. ℨss;
Aq. rosæ, ℨviiss.

M. for a lotion, to be used by dabbing the part.

For chapped nipples or hands, fissures of the lips, irritation of the skin of any kind, as after shaving, exposture to the sun, for pityriasis, &c.:

℞ Sodæ biboracis, ℥ss ad. ℥j;
Glycerine pur. ℨss;
Aq. rosæ, ℨviiss.

M. for a lotion, to be used by dabbing the part affected.

For alopecia following fevers, &c., or for the falling off of the hair, dryness, or want of action of the scalp, thinness of the hair, &c.:

℞ Sp. Ammon. co. ℨj;
Glycerine pur. ℨss;
Tinct. cantharid. ℥j ad. ℥ij;
Aq. rosmarin. ℨvij.

M. for a lotion, to be used with a wet hair-brush once or twice a day.

For "hot" rheumatism, or arthritic gout, neuralgic pains, sprains, bruises, stiffness, &c.:

℞ Lin. Saponis comp. ℨiss;
Glycerine pur. ℨss;
Ext. belladon. ℥j, &c.

M. for an embrocation, to be used twice a day in the ordinary manner.

PART II.—SURGERY.

SECT. I.—SYMPTOMATOLOGY AND DIAGNOSIS OF SURGICAL DISEASES.

Art. 43.—*Tumours of the Testicle, with Remarks on a Case of Hematocele.* By A. H. Grimshaw, Esq.

(*Philadelphia Medical Examiner.*)

Much difficulty exists in forming a diagnosis of tumours of the testicle. Hydrocele has been mistaken for hernia; a case is reported in which the operator went so far as to open the sac, only discovering his error when the fluid followed the knife. Hematocele and hydrocele may be confounded, also hematocele and medullary fungus. Hematocele and hernia might be more easily confounded than the latter and hydrocele.

Case.—J. W., æt. 40, complained of a tumour of the right testicle; as he expressed it, "a growing of one testicle into the other." Latterly he had felt some pain in the groin, and the fear of hernia hastened his desire for relief. The swelling was elastic, certainly more so than fluctuating; more solid than hydrocele, with less corrugation of scrotum; no transparency. Tapping was suggested, supposing it to be hydrocele. Mr. Grimshaw, however, was of the opinion that the fluid was contained within the tunica albuginea, and that this occasioned the deceptive feeling of solidity. At least six years had elapsed since first noticing, and for some years no increase had taken place; until lately no pain had been present. A suspensory bandage relieved the pain entirely, proving the non-malignancy of the tumour. Upon proceeding to the operation, with the intention of injecting tincture of iodine and water, at least a pint of bloody homogeneous fluid flowed out. The sac was thickened; did not contract; there was also circocele, and enlargement of the vas deferens. The testicle lay in front, and at the bottom of the tumour. The use of the injection was deferred, as it was thought a better cure would be made by allowing the sac time to contract.

"It will be seen," says Mr. Grimshaw, "that we were right as to the fact of fluid being present, but wrong as to the precise nature of the disease. Under the circumstances, I think I was right in hesitating to inject an irritating fluid, since I found, in place of hydrocele, hematocele. The latter is generally laid down in books as occurring suddenly, and after tapping for hydrocele. Pott, however, describes an effusion of blood within 'the tunica albuginea, or proper coat of the testicle, and if the quantity be considerable, it will afford or produce fluctuation to the hand of the examiner, very like to that of an hydrocele of the tunica vaginalis.' According to this author, extirpation of the testicle is the only remedy."

The most delicate touch cannot reveal to us whether we have in the tumour before us water or a bloody fluid, neither can we base our diagnosis on the transparency or the reverse. No great injury can be caused by puncturing even a sarcocele or like solid tumour of the testicle, except that "dry tapping" seldom redounds to the credit of the operator.

Collections of fluid under fibrous membranes, are especially apt to be mistaken for encysted tumours, requiring the use of the knife. Again, we may confound cystic swelling of the testicle with hydrocele, and much more easily with hematocele.

With hernia, hematocele might be, even by a careful surgeon, confounded. A patient has a pain in the groin; he also says that for some days he has had no evacuation from the bowels. Some men are thrown into paroxysms of pain by the mere mention of an examination, the approach of a hand causes them to groan; while others, actually in more danger, will allow you to handle them very roughly without an exclamation. Suppose one of these irritable subjects is attacked with colic, calls a surgeon, who, being a careful man, and having his attention drawn to hernia by the complaint of colic, inquires whether his patient has a rupture. Being told there is a tumour in the pubic region, he examines; in all probability having expected hernia from the first, he jumps at a conclusion, endeavours to reduce by taxis, &c.; and, as in cases on record, his astonishment is only equalled by his chagrin when his error is discovered.

The assertion that the bag truss relieved the dragging pain, and thereby proved the non-malignancy, may be called in question, as it is said that "sarcomatous degeneration of the testicle" does not produce, for a long time, more than a dragging and slight pain, which is removed by a bag truss.

Art. 44.—*On the Disjunction of the Lower Epiphysis of the Humerus.* By Dr. Smith.

(*Dublin Quarterly Journal*, Feb. 1850.)

A description of the signs which characterise this lesion must also be, to a certain extent, an enumeration of those which accompany dislocation of both bones of the forearm backwards; many of the symptoms, likewise, belong to the transverse fracture, immediately *above* the condyles. The injury usually results from a fall upon the elbow; it may occur from a fall upon the palm of the hand, the forearm being at the time extended upon the arm. The limb immediately becomes powerless, severe pain is experienced in the elbow, and the following signs present themselves: The forearm is flexed, and the hand in a middle position between pronation and supination; the olecranon, drawn upwards and backwards by the triceps muscle, mounts above the level of the condyle of the humerus, these three prominences forming the points of a triangle, the base of which is below; the antero-posterior diameter of the elbow is greatly increased, and the lower end of the humerus can be felt projecting in front. The application of a gentle force is usually sufficient to restore

the normal appearance of the limbs; but when the parts are abandoned to themselves, the deformity soon recurs. If, after the removal of the displacement by extension, the forearm be rotated upon the humerus, or if the surgeon, as recommended by Dupuytren, grasps the arm in one hand, and the forearm in the other, and then moves them backwards and forwards upon each other, the crepitus which characterises fracture may generally be elicited. The motions of flexion and extension are exceedingly limited; and any attempt upon the part of the surgeon to communicate them produces severe pain.

The signs above enumerated are sufficient to demonstrate that the injury in question may readily be confounded with transverse fracture of the humerus above the condyles, or with luxation of the forearm backwards. The former would be a mistake of comparatively slight importance, inasmuch as the same treatment is applicable to both lesions; but the latter must be considered as a grievous error, the results of which are nearly as lamentable as those of leaving a true luxation of the joint unreduced.

As the loss of the normal relation between the olecranon and the condyles renders the separation of the epiphysis peculiarly liable to be confounded with dislocation of the forearm backwards, and as it is obviously a matter of the utmost importance to distinguish carefully between these accidents, let us now consider the signs, by availing ourselves of which we materially diminish the chance of mistaking it either for luxation or for fracture above the condyles.

In case of fracture traversing the line of the epiphysis, the transverse diameter of the tumour, which projects in front, is equal to that of the opposite humerus, measured anteriorly from condyle to condyle. In this respect the accident resembles the dislocation of both bones backwards, but differs from fracture *above* the condyles. The outline of this osseous tumour is rounded, presents to the feel none of the irregularities or sharpness of an ordinary fracture, and upon its inferior surface, which is convex, and limited at either extremity by the condyles, neither trochlea nor capitulum can be distinguished.

When the joint is viewed posteriorly, two osseous prominences are seen, and can be distinctly felt; they are both placed above and behind the plane of the condyles, but are themselves situated (if the patient be not more than six or eight years of age) nearly upon the same level, the internal, however, being always a little higher up than the external. At a more advanced age, the distance between these two prominences is observed to be greater, in consequence of the increased development of the internal, which is formed by the olecranon, the summit of which process grows by an epiphysis.

At no period of life, however, at which it is possible for the accident in question to happen, is the distance between the two projections nearly as great as it is always found to be between those which, in cases of luxation of both bones of the forearm backwards, constitute so marked a feature of the injury. In the latter accident, the distance averages about one inch and a half, while in the former it is seldom more than three quarters of an inch; the external tumour in this case, being formed by the capitulum of the humerus, still surmounting the head of the radius, for which, in consequence of the concave form of

its superior surface, it is extremely liable to be mistaken, if attention be not paid to the diagnostic sign which has just been mentioned.

The following is a concise statement of the points of resemblance and dissimilarity between disjunction of the epiphyses and the two injuries with which it is most liable to be confounded; viz. fracture immediately above the condyles, and luxation of both bones of the forearm backwards.

The symptoms which belong to it in common with fracture above the condyles are: shortening; crepitus; the removal of the deformity by extension, and its tendency to recur when the extending force is relaxed; the presence of an osseous tumour in front of the joint; the increase in the antero-posterior diameter of the elbow.

It differs from the supra-condyloid fracture in the greater transverse breadth and regular convex outline of the anterior tumour; in the existence of two tumours posteriorly; in the loss of the normal relation of the olecranon to the condyles.

It resembles dislocation of both bones of the forearm backwards, in the following particulars:

The transverse diameter of the anterior tumour is the same in each case; so also is the antero-posterior breadth of the elbow; and in both the olecranon ascends above the condyles, the limb is shortened, and two osseous prominences can be distinguished posteriorly.

It differs, however, from luxation, in the existence of crepitus, the tendency of the deformity to recur; in the anterior tumour being destitute of trochlea and capitulum, and in the circumstance of the two posterior tumours being nearly upon the same level.

ART. 45.—*Symmetrical Swelling of both Upper Eyelids, resembling Œdema, but depending on a Protrusion of the Orbital Fat near the Lachrymal Gland.*

(*London Journal of Medicine.* Communicated by Mr. WILLIAM BOWMAN.)

Henry John B——, æt. 16, a very healthy-looking boy, of ruddy complexion, reddish hair, son of a publican at Islington, came to the Ophthalmic Hospital in Moorfields, in Feb. 1848, for a swelling of both upper eyelids, which made his friends and himself uneasy by its unsightly appearance, though he had experienced no pain. The swelling was precisely alike on the two sides. It was almost limited to the outer half, or outer two thirds of the lid, extending from the brow to within a sixteenth of an inch of the tarsal border, where it ceased, by a groove over which the relaxed and distended integument hung, as was very evident when the lid was viewed in profile. The swelling was reddish in the middle part from fulness of the cutaneous vessels. It was quite soft, as if from œdema of the parts subjacent to the skin, and when pressed by the finger no resistance was encountered nor was any indentation left. The skin was thin and slipped freely over the orbicularis muscle, nor was it easy to seize between the finger and thumb a fold of the muscular layer. When this was done, however, the feeling was that of redundant and loose cellular tissue beneath, and not of any tumour. Eversion of the lid showed the

conjunctiva and subjacent tissue to be perfectly natural. Pressure behind the external angular process detected no tumour. The globe was in all respects healthy. Careful inquiry as to his general functions only served to show that he was in excellent health.

He stated that this swelling had come on gradually, on both sides together, during the preceding three months, without pain or tenderness, and that he was first made aware of it by the remarks of his friends. On one morning it had been so much worse that he could not open the lids on waking; but this had subsided during the same day, and now, for some weeks, the affection had been much the same. It appeared to be a symmetrical partial œdema of the lids, of which the cause was concealed.

Purgatives, alterative treatment, an evaporating lotion to the lids, and subsequently diuretics, were administered. Mr. Bowman next ran some slender threads through the swelling on one side only, as an experiment, and left them in for a week, hoping there might follow some condensation of the tissues in their tracks, but when they were withdrawn the swelling remained the same, but the integuments were rather redder. He then came under Dr. Farre's care, who resumed the alterative remedies, with a strictly regulated diet, but without any good result. Subsequently, iodide of potassium and the application of the tincture of iodine to the swollen lids was tried, but the latter appeared to increase the tumefaction by drawing more blood to the skin, and was discontinued.

In November he was just as in the preceding February. There was the same redness and bulging of the skin, and the same feel of the parts; neither tenderness nor itching. His health was good.

At the end of April the young man again presented himself, and, being in exactly the same state as before, he was anxious that any operation should be performed which offered a chance of improving his appearance. Mr. Bowman accordingly determined to employ a modification of the operation for entropion, and to remove not merely a horizontal ellipse of integument from the most projecting part of the swelling, but also a corresponding portion of the orbicular muscle and of the fascia below it, and so to endeavour to consolidate the integuments with the parts beneath, which seemed the principal seat of the disease.

On the 4th of May the operation was performed by Mr. Bowman as follows:—a piece of the integument was taken up with the entropian forceps, and removed with scissors to the extent of two thirds of the horizontal width of the lid, and one third its vertical depth. The orbicularis thus exposed was healthy, and was removed to nearly the same extent by means of common forceps and scissors; a dense cellular fascia then bulged forward in the gap. This fascia being removed in its turn, a mass of fat resembling the natural fat of the orbit, and about as large as an almond, fell forward in the opening and was immediately removed. It was not tightly embraced by any capsule of the areolar tissue which surrounded it, but was divided into pellets, or small lobes, which moved freely on one another. It therefore had not the appearance of a fatty tumour. After its abstraction there was no other tissue projecting; the wound, therefore, was closed by

sutures, and it healed in four days with an almost complete relief of the deformity. A fortnight after, at his own request, precisely the same operation was performed on the right side, and with the same result. On cutting into the sub-muscular fascia, a pellet of fat appeared, and was cut away; a lobe of what seemed to be lachrymal gland was then exposed to view, but showing no disposition to project, it was not interfered with. When the wound healed, the deformity was even more completely removed than on the other side, more care having been taken with the shape of the piece of integument excised. Two months afterwards the lids hardly bore any trace of what had occurred.

[We subjoin the following remarks which Mr. Bowman has appended to his report of this case.]

Probably most surgeons of large experience in eye diseases have occasionally met with a case like the preceding, in which a swelling, resembling œdema, and of which the most obvious character was a distended and somewhat pendulous and reddened condition of the skin of the upper lid, occurred simultaneously on both sides in a young person otherwise in perfect health. I have myself seen but two others besides this one, and in neither of these was the swelling known to depend on the protrusion of fat, although I have little doubt that such was actually the fact. In both the upper lid was similarly affected, and both were young subjects.

The true fatty tumour of the orbital cellular membrane is comparatively rare, and it occurs singly, generally at the upper or outer side of the globe, in the loose areolar tissue outside the recti muscles. When sufficiently large to cause a prominence of the skin, it admits of being felt as a tumour, although readily retiring into the orbit under pressure, and on everting the lid, it usually projects under the conjunctiva, where that membrane is reflected from the lid to the globe near the outer canthus.

The following case will illustrate some of these points, and show the difference between the adipose tumour of the orbit and the affection above described.—Case: November, 1846.—Priscilla Glennie, æt. 47, has a small, soft tumour by the outer side of the right globe. It is moveable, seems flattish, lies against the globe, and presents an edge forwards. It is not visible unless she directs the eye inwards, but it then projects slightly between the lids. It is covered by the conjunctiva, which is whitish, and seems adherent to it. The white colour and the shape of the tumour make it look like the lachrymal gland, for which, of course, it is not mistaken. She first noticed it about four months ago, when it was of its present size. She had previously felt some pain in the eye on reading, &c., and this irritability continues.

26th.—I removed the tumour through the conjunctiva with scissors, after drawing it outwards with forceps. It proved to be a simple, fatty tumour, lying loosely attached in the areolar tissue, between the external rectus and the lachrymal gland. The wound was healed in a week, and the movements of the globe, though slightly restrained at first in an inward direction, soon became quite free. When the case of H. J. B. presented itself, I was far from suspecting the swell-

ing to depend on fat. It had more the appearance of œdema than of anything else, although its limited size, and the colour of the redundant skin were different from what I had seen in any instance of simple œdema. There was no tumour to be felt, neither was there any projection within the lids in any position of the globe. Its existence in the same situation in each orbit, also discouraged the idea of there being any tumour. On referring to the principal modern works, and especially to those of Lawrence and Mackenzie, I could find no account of a corresponding affection. I do not pretend to explain the reason of the remarkable projection of the adipose tissue in so symmetrical a form on the two sides, and at the same period of time. The thought suggested itself, whether it may not have depended on some enlargement of the lachrymal gland, analogous to the chronic enlargement of the tonsils, sufficient to displace and thrust outwards a fragment of the fat in which the globe in cushioned. But, had this existed, there would surely have been a perceptible swelling in the region of the gland after the removal of the fat, and also a tendency in the gland to fall into the gap, both of which were wanting. There was no undue projection or solidity of the gland when examined through the wound during the operation. With respect to the treatment adopted by me in this instance, I am quite of opinion that the mere removal of a portion of skin would not have sufficed. The integument would have been still pressed on by the fat beneath, and the swelling would have remained, with only a smoother and redder covering. Yet it would have been a natural course enough to have confined the operation to the skin, and not to have gone through the orbicularis; and this, in fact, I witnessed in one case.

Art. 46.—*Case of Aneurismal Varix in a Stump.*

By William Cadge, Esq.

(Communicated to the *London Journal of Medicine*, Feb. 1850.)

A young man, æt. between 30 and 35, consulted the late Mr. Liston, in the spring of 1847, on account of strumous disease of the tarsal joints of the right lower extremity, resulting from a neglected sprain of the foot. There was pain, lameness, and chronic thickening of the synovial membrane. Various remedies were had recourse to, but failed in effecting a cure. Lateral leather splints were applied, a strong solution of iodine was painted on the part, ferruginous tonics were prescribed, and he was sent to the sea-side. Subsequently, the question of amputation was raised, but for awhile was disputed, owing to pulmonic complications. It was, however, eventually agreed upon, the patient being in apparent health, and the phthisical symptoms latent; scarcely any cough or expectoration, and but little emaciation.

In the operation, it was first attempted to remove it, as recommended by Chopart; but the astragalo-scaphoid articulation was found rough, so the foot was removed at the ankle-joint.

About ten days or a fortnight after the operation, Mr. Cadge's attention was drawn to a swelling over the inner side of the stump,

apart from the wound, about the size of a large walnut, red, tender, and fluctuating, and pulsating violently at every part. There was also a loud, whirring murmur audible with each beat of the pulse. A careful examination led to the conclusion that it was simply an abscess seated over or under the posterior tibial artery; it was, accordingly, opened, and pus evacuated. The wound healed, but the remarkable pulsation and bruit continued as strongly as before. The patient himself was quite aware of the pulsation, but, as it caused no pain or inconvenience, it attracted no further notice.

In January, 1849, about fifteen months after the amputation, he fancied that the pulsation was stronger than usual, and that, in addition, there was some swelling of the inner side of the stump. When Mr. Cadge examined it, he found the same pulsation and bruit, both somewhat increased in intensity, as had existed a year ago; but there was, also—which had not been before noticed—a pretty distinct elastic swelling, about two inches long and of two fingers' breadth, over the inner side of the stump. Every part of the swelling pulsated forcibly, and the loud whirring murmur could be heard at some little distance. When the posterior tibial artery was compressed above, the pulsation ceased, and the tumour became flaccid; and both returned when the finger was removed.

What was the nature of this swelling? That it was aneurismal there could not be a doubt: if it was a common false aneurism, then it had existed at the time of the operation, or very shortly after; but the progress during the interval had been very unlike that which usually occurs in false aneurisms.

Mr. Cadge proposed that he should refrain from using the stump for a time, and allow an attempt to be made to cure by means of pressure, both on the swelling and on the artery above, by two of Lignorini's tourniquets. Should this plan fail, and the swelling increase, it would then be time enough to decide what operation to perform; but if an increase in size occurred, firm pressure should be made on the whole stump with an elastic bandage, and he should continue to use it. The plan of compression was accordingly determined upon, and the tourniquets applied. A day or so after their application, the patient was unfortunately attacked with constipation of the bowels, and all the symptoms of some internal mechanical obstruction, which defied all remedies, and terminated in death eight days from the commencement of the attack.

An anatomical examination was made thirty-six hours after death. The cause of the obstruction was found to have arisen from a lengthened and twisted condition in the sigmoid flexure of the colon.

The stump was removed about six inches above the extremity, and some injection having been thrown into the artery, a careful dissection was made. The first thing which attracted notice was, that the two companion veins of the posterior tibial artery were filled with injection. On tracing the artery downwards, a large branch, probably the internal plantar, was found to arise from it at the end of the stump; this branch, about the size of a crow-quill, ended, within a quarter of an inch from its origin, in a bulbous enlargement, about the size of a horse-bean, which communicated, by means of a large short branch,

with the posterior tibial vein, and thus formed an aneurismal varix. The tibial artery and veins were continued onwards to about the centre of the lower end of the stump, where they ended abruptly, being of full caliber to their termination; there was no distinct tumour of any kind.

In the leg, the vessels were bound down deeply by the strong fascia which passes between the tibia and fibula; close to the ankle this fascia had been interfered with by the operation, and the vessels escaped from beneath its lower border, and mounted over the root of the inner malleolus separated from the bone by the bulbous extremity of the tibial nerve; and thus, at this point, where the varix existed, they were close beneath the shin, and both artery and veins beating strongly, gave the elastic feel and appearance of defined swelling, which had been mistaken during life for the sac of a circumscribed false aneurism.

The dissection of the stump showed how well adapted it was to bear pressure. The plantar fascia, where it had been cut from the os calcis, had become attached to the tendo achillis behind, and in front, to the cut ends of the extensor tendons: between it and the lower end of the tibia there was merely some reddish loose cellular tissue; but between the fascia and the skin there was a great thickness of dense granular fat, much more than is usually found over the heel, and this not only served as a most efficient pad, but also reduced the difference in the length of the two limbs to less than two inches.

Remarks.—The diagnosis of aneurismal varix, from circumscribed false aneurism, is generally clear and plain; and it may be thought that, in this case, the true condition of the parts ought to have been appreciated. But a little consideration will show, that the differential signs were few, and imperfectly marked, whilst all the symptoms of false aneurism were present, viz. in pulsating tumour situated in the course of an artery, apparently slowly increasing in size, and attended by a marked bruit, as the blood flowed in the supposed sac,—the pulsation, swelling, and bruit, all disappearing when pressure was made on the vessel above, and returning when the finger was removed. That which tended most to throw a doubt on this view of the case was that, whatever the true nature of the disease might have been, it had existed upwards of a year, and the increase in size of the tumour, if indeed it enlarged at all, was very slow, and wholly unlike the usual behaviour of an aneurism. The slow progress and long duration led me to recommend the patient to pause before submitting to any operation; and, I need hardly say, that the dissection has shown that, in all probability, no surgical interference would have been necessary, had he continued to live.

The unprecedented occurrence of varix in a stump contributed not a little to mislead the diagnosis. Since the first discovery of the disease by Dr. W. Hunter, in 1757, the records of surgery contain numerous cases showing that it may occur in various parts of the body, besides at the bend of the elbow; thus the carotid, subclavian, temporal, radial, femoral, and popliteal arteries, have all been the seat of varix; and Mr. Syme has met with a case of varicose aneurism of the aorta and vena cava, which occurred spontaneously. Next to

the bend of the elbow, the most frequent situation of varix is the thigh, between the femoral artery and vein, and it is generally produced by the sudden closure of the thighs to catch a falling sharp instrument, the point of which passes between the artery and vein, wounding both. Mr. Liston has described a case of this kind, which I had an opportunity of examining; there were varicose veins and ulcers of the leg, and a tumour on the front of the thigh, caused by venous dilatation, thrilling pulsation, and loud systolic murmur, together with weakness and numbness of the whole limb. Firm pressure from the toes upwards diminished the pulsation and reduced the swelling, and no operation was required.

I have, however, met with no instance of its having occurred in any part of the body as a consequence of amputation, and it is not easy to understand how it was brought about in this particular case. Most probably the point of the bistoury passed between the artery and the vein, wounding both at the point where they lay in apposition. The communication thus established at the time of the operation, would require but very little pressure to prevent all outward hemorrhage, and this was afforded by dressing the stump.

It was remarked by Dr. Hunter that in aneurismal varix at the bend of the elbow, whilst the pulse at the wrist was weakened, the brachial artery was enlarged and dilated; this he attributed to the diminished resistance to the circulation from the aperture in the artery, which had almost the same effect as if a branch as large as the opening had been added. Mr. Hodgson explained it by saying that as a part of the blood was diverted from its usual course, it was necessary for the artery above to enlarge and carry more blood, in order to keep up the nourishment of the lower part of the limb; the former is the law, and the latter its application.

The case I have described affords a negative proof of the correctness of these explanations, as there was no limb below the point at which the varix existed, so there was no necessity that the vessel should dilate; accordingly it was found, on dissection, to be of ordinary caliber.

Art. 47.—*General Considerations relative to the Diagnosis of Tumours of Bone.* By Edward Stanley, f.r.s.

(*Treatise on Diseases of Bone*, p. 195.)

Our objects in practice are, first, to recognise the broad distinctions between the innocent and malignant tumours of bone; and, secondly, to be able to decide upon the connexions of the tumour, in addition to its nature, as influencing the question of removing the tumour alone, or together with a part or the whole of the bone from which it grows. The following summary of facts may perhaps be of use:

Of Tumours composed of Soft Surfaces, but which are Incompressible.—These tumours are mostly fibrous or cartilaginous, but they are occasionally found to consist of the firmer sort of encephaloid substance.

Of Tumours which have the Hardness and Solidity of Bone.—If such a tumour have an even, regular outline, is of an oval shape, with

its long diameter in the axis of the bone, and if, besides, in its whole extent, it closely surrounds the bone, the probability is considerable that it will prove to be a malignant osseous tumour, the osteoid of Müller. If the tumour which possesses these characters is of irregular form, and moduled or branched on its exterior, its characters are those of exostosis. The tumour of enchondroma may be noduled on its exterior, but is more compressible than exostosis.

Of Tumours which are so Soft as to be readily Compressible.—Most of the compressible tumours of bone are encephaloid in one or other of its forms, and consequently malignant. There are, however, exceptions, in the instances of tumours composed of soft vascular, and in some cases apparently an erectile tissue, exhibiting none of the characters of malignant disease.

Of the Degree of Fixedness of the Tumour as Evidence of the Connexion it has with the Bone.—The absolute immobility of a tumour is no ground for determining whether it has grown from the periosteum, from the surface of the bone, or from its interior. A tumour which has a broad extent of growth in the cellular tissue, immediately adjacent to the periosteum, is often as firmly fixed in its position, and therefore is as immoveable as the tumour which has originated in the bone. The looseness and mobility of a tumour lying upon a bone may lead to a wrong conclusion respecting the mode of its origin. An encephaloid tumour, which had originated within a rib, and extended through the walls of the bone, and thence through the pectoral muscle, was felt immediately beneath the skin, and was so moveable, that its removal was proposed, in the belief that it was subcutaneous.

Of the Enlargement and Tortuosity of the Subcutaneous Veins ramifying over the Tumour.—This condition of the veins is not, as it has often been regarded, evidence of malignancy in the tumour of bone; it occurs upon simple inflammatory and rapidly-formed swellings, wholly unconnected with malignant disease. The cause of the enlargement and tortuosity of the superficial veins is, in all instances, probably an obstruction to the circulation in the deep-seated veins of the part.

Condition of the absorbent glands in the neighbourhood.—The absence of enlargement or other change in these glands is not a sure sign of the innocent character of the disease. Occasionally, even in the advanced stage of encephaloid disease originating in the femur, the femoral and inguinal glands are neither enlarged nor altered in structure.

Anomalous Character imparted to the Tumour by the flow of Blood into it from an ulcerated artery.—Tumours of bone commonly occasion the obliteration of the arteries they meet in their progress, but in some instances it is otherwise. A tumour growing from a bone has occasioned the ulceration of a large artery with which it was implicated; hemorrhage then takes place into the tumour, giving to it an anomalous character, which greatly obscures the diagnosis.

Displacement of blood-vessels by the Tumour.—In the examination of morbid growths originating in the lower part of the femur, I have found the popliteal artery and vein displaced and separated from each

other to an extent which would scarcely be expected. The following case exemplifies this :—

A female, æt. 37, was admitted into the Sussex Hospital under Mr. Lawrance, with a large swelling occupying the entire circumference of the knee-joint; it was soft and elastic, and the veins ramifying on it were large and tortuous. The thigh was amputated. The femoral vein, at the part where it was divided, was enormously dilated, the valves were ineffective, so that hemorrhage took place to an extent which nearly extinguished life. The artery was separated from the veins by a distance of three inches.

Art. 48.—*Diagnosis of Abscess of Bone.*

By Edward Stanley, f.r.c.s.

(*Treatise on Diseases of Bone*, p. 43.)

The diagnosis of abscess of bone requires particular notice.

The symptoms which belong to neuralgia of bone, and to simple inflammation of its tissue, have, in many instances, so closely resembled circumscribed abscess, as to render the diagnosis a matter of difficulty; and yet it is a diagnosis of much importance, for the right determination of cases in which perforation of bone should be undertaken with the expectation of finding matter.

The neuralgic affection of bone has the following special features :—the nervous or hysteric character of the constitutional symptoms; the pain, although severe, not limited to a circumscribed space, not aggravated by movement, and occasionally attacking the corresponding spot on the other limb; further, the pain does not yield to depletory or sedative measures. On the other hand, the symptoms accompanying circumscribed abscess of bone are not generally such as bespeak the hysteric temperament; but this distinction must not be too confidently relied on. The abscess in bone, especially in young females, has given rise to well-marked, nervous, local, and constitutional symptoms; and if, in addition to these, there should be thickening and tenderness of the coverings of the bone, it will be difficult to determine whether the source of pain be exclusively neuralgic, or whether there is not, at the same time, matter confined within it.

The diagnosis between circumscribed abscess and inflammation of bone, is not always well marked. In some instances, simple or syphilitic inflammation of bone have so closely resembled circumscribed abscess, as to be mistaken for it. These inflammatory attacks, it is true, chiefly affect the shaft of the bone, while circumscribed abscess rarely occurs elsewhere than within their articular ends; yet, as in the following case, difficulty may be experienced.

A gentleman, æt. 25, when first seen by Mr. Stanley, had for five years suffered from enlargement of the shaft of the tibia, presumed to be syphilitic. The swelling was well defined, hard, and of the size of the fist. Mercury, iodine, together with various local remedies, had been unsuccessfully employed. At length, an incision carried freely

over the swelling down to the bone, was followed by immediate and permanent relief of the pain. A different view of the case might have led to perforation of the tiba in the expectation of finding matter.

ART. 49.—*On the Use of the Exploring Needle in the Diagnosis of Doubtful Forms of Pelvic and other Tumours.* By Prof. SIMPSON.

(*Monthly Journal of Medical Science*, Feb. 1850.)

Those authors who, some years ago, wrote at great length upon acupuncture, as Béclard, Cloquet, Carraro, &c., all spoke of the impunity with which they found that acupuncture needles could be introduced into the muscles, vessels, and even the viscera of the living body. It was well known that small punctured wounds did not bleed, and the parts punctured generally closed immediately, and left little or no trace of the separation of their tissues by the puncturing instrument, provided it were small.

Taking advantage of the knowledge of these facts, it has been found that, using a small grooved needle, or very slender trocar, we can introduce it into various morbid parts, so as to ascertain the nature of their contents. Surgeons had used such exploring needles, for this purpose, in cases of doubtful tumours, in order to ascertain whether they were abscesses, or cysts, or aneurisms, &c. They have been used to explore even large aneurisms without any dangerous result. Dr. Simpson alluded to a case in which a celebrated surgeon was showing to his pupils the use of the exploring needle, in detecting matter in what was supposed to be an inflamed bubo, before laying it open. Air, however, rushed out instead of pus, showing the swelling to be formed by the skin inflamed over a hernial sac.

Dr. Simpson mentioned that he had repeatedly used the exploring needle to detect the nature and contents of various kinds of pelvic tumour, when no other means of diagnosis were sufficient for that purpose. He especially adverted to its advantages as a means of diagnosis in some doubtful cases of pelvic abscess, and ovarian tumours, and in cases in which tumours existed about the cervix uteri, the cystic or other nature of which it was otherwise impossible to determine. Would it serve to diagnosticate cases of extra-uterine pregnancy, either by the instrument striking against bone, or by any contents that might pass through the tube?

The instrument which Dr. Simpson employed was simply a very slender silver trocar and canula, the former tipped with a very short steel point, of the form of that of a graving instrument. The tube of the trocar is open for nearly an inch at one side at its point, so as to admit more easily of the escape, through the canal of the tube, of any fluid in which its point may be placed. Sometimes Dr. Simpson had applied an exhausting syringe to the outer end of the instrument, in order to produce the flow, along its tube, of any more viscid fluid. Thin fluids, like those of most ovarian cysts, flow readily along the tube, and can be recognised by their microscopic and other characters. When introduced into a sac containing pus, generally a few drops only of the fluid enter the tube of the instrument, from which,

however, it can be readily forced, after withdrawing the instrument, by blowing through the tube. If our microscopic characters of specific tumours and morbid structures were more exact than they are at present, the pathologist might ascertain the nature of most morbid tumours that might appear in the living body, by the use of such an instrument, for he could remove by it a sufficient amount of its structure or contents for histological purposes.

SECT. II.—NATURE AND CAUSES OF SURGICAL DISEASES.

ART. 50.—*Danger of using Gutta Percha Catheters.*

(*Medical Gazette*, Oct. 26, 1849.)

[In our last volume, (Art. 58,) we gave the abstract of a paper, by Dr. Bigelow, on the advantages of gutta percha bougies; that their use is not altogether free from risk, is shown in the following case, narrated by Mr. Cæsar Hawkins, surgeon to St. George's Hospital:]

James Turner, æt. 58, was admitted into the hospital, July 18th, 1849. He had been under my care about eighteen months ago, and has been constantly in the habit of passing a catheter since that time, in order to prevent the mischief of partial retention of urine from enlargement of the prostate gland. In using the instrument to-day (a gutta percha catheter given him by a friend), it broke in the urethra, and a fragment, about four inches long, remained behind, which, however, he says, produces no inconvenience except a pricking sensation in the urethra in walking. On examination, it was evident that the stream of water was as free as usual, and, on external examination, no foreign body could be felt in the urethra; so that, if his account was correct, it must have broken off in the bladder, and by means of a catheter on a subsequent day, it was distinctly felt lying towards the left side of this organ.

As the disease of the prostate occasioned much ropy mucus, streaked with blood, it was determined to keep him quiet for a short time, with the view of lessening this irritation, if possible, before endeavouring to extract the fragment, as the only sensation he complained of was a burning pain in the urethra, immediately behind the scrotum. It was found, however, that the presence of the foreign body excited more irritation of the bladder than before, and the following is the account of its removal:

Aug. 16th.—After the patient had been fairly got under the influence of chloroform, which, however, was not till after some time, a small lithotrite was passed into the bladder; this was not done without some difficulty, on account of an obstruction in the membranous part of the urethra; this, however, after a little pressure kept up for some time, gave way, and the foreign body was at once detected with the instrument, still in the same position on the left side. It was at once

seized, and an attempt made to bring it through the urethra, but it broke, apparently about the membranous portion of the urethra; and on removing the lithotrite, about half an inch of the catheter was found between its teeth; this was coated with calcareous matter. A long pair of straight urethra forceps was then passed down the urethra, and at its membranous portion the foreign body was, after a short time, again seized. In attempting to bring it out, it again broke off, but another half-inch of the foreign body was brought away. The urethra forceps were again introduced, and the remaining portion removed without further trouble. On putting the three bits together, they evidently made up the whole of the catheter which had been broken off. A catheter was, however, passed into the bladder, but nothing further was detected.

He suffered some pain after the operation; but the frequency in making water lessened in a day or two, and he was again able to retain the water, which had begun to pass involuntarily, in consequence of the presence of the foreign body.

Art. 51.—*Observations on Injury of the Head.*

By Benjamin Travers, Jun.

(*Provincial Medical Journal*, Oct. 31, 1849.)

Mr. Travers suggests that the following arrangement of head injury is, perhaps, more simple and descriptive of its several forms than any hitherto propounded for general purposes of practice and observation. All these injuries may be regarded as belonging to one of two principal divisions, which may be termed—1, commotion; 2, compression. Irritation and inflammation of the organ can scarcely establish a claim to a separate divisional classification. These are rather remote consequences or incidents, and grow out of the peculiar circumstances of an individual case. As to their frequency, inflammation is more rare than convulsion, paralysis, or other purely neuralgic conditions, and especially so in recoverable instances.

Commotion is either fatal or transient, and remediable by art. It embraces all cases within the two extremes of shock or blow which kills immediately, leaving no visible disintegration or trace of its effect after death, and those examples of protracted reaction, the event of which is uncertain through a period of many days. To commotion he refers alike simple stunning to be followed by present recovery; also those mixed conditions of alternating stupor and excitement, which terminate fatally after an uncertain interval, and depend upon lesion of the substance of the brain. The last are often characterised by so many signs of recoverable shock as to excite great doubts about their actual nature, until the patient begins to die. Torn substance and fractured basis, in all its forms, are of this class.

Compression, whether by blood or bone, is recognised as occurring in one of two forms:

1. It is irremediable either from its extent or its intensity, or from the combined operation of these two causes.

2. It may be relieved by taking away the depressed and compressing body.

Compression remediable by art is of two kinds; it is either partial or complete.

When the effect is partial, it is marked by signs of irritation. Of this order are the spiculated growths, angular projections, and some of the fractures of the internal table.

The other variety embraces all those cases of collapse, stertor, and insensibility, which mark the action as being at once persistent and complete.

If the whole be reduced to a tabular form, it may be displayed thus:

COMMOTION.

1. Fatal, without lesion or reaction of any kind (rare).
2. Simple, with a brief and healthy reaction (ordinary concussion).
3. Obscure, with a slow reaction, and recovery more or less complete.
4. Lesion of the substance of the brain, with or without fracture of the cranium, uniformly fatal in the latter, and ordinarily so in the former case.

COMPRESSION.

1. Directly fatal, whether from the nature or extent of the mischief.
2. Not directly fatal, but remediable by art, and occurring in one of two forms.

(*a.*) Pure, by surfaces of blood or bone.

(*b.*) Partial, by depressed edges or spiculæ, the symptoms being incomplete, and marked by signs of irritation.

Mr. Travers next dwells upon the local and general management of head injury. He says: "If we compare the remarks of such clever observers as Dean and Pott with the practice of the present time, we shall be puzzled to explain what has become of a numerous class of cases, which in their day called for the continual 'setting on of the trephine.' They must still occur, and be even more frequent now than formerly; the fact is, that they are differently interpreted. Mr. Pott, with all deference be it said, for he was a scholar as well as a surgeon, mistook the road upon a false theory of 'prevention.' Mr. Dean fairly admits 'that the people all died in spite of the trepan, physic, bleeding, and low diet, and that those who escaped the operation, or any treatment at all, often made the best recovery.'"

It must be admitted that the principles of inflammation, the doctrines of constitutional power and functional derangement, were very improperly understood, and not appreciated then as now, and that, besides more exactness of observation and detail, we possess in the action of mercury a means of arresting inflammation, and restoring a disturbed balance of circulation, of which they knew nothing. Where, half a century ago, the lancet was indiscriminately used, or the knife, the saw, and the cold grinding cathartic constituted the treatment of a doubtful concussion, we now attach more confidence to the operation of small doses of calomel, at regular intervals, aided, as required, by the trickling bleeding procured from a score of leech bites.

Head injury is often remarkable for the great obscurity of its early symptoms, to say nothing of their variety. After the same kind and amount of violence one man is rendered stupid, and his pupils, whether dilated or not, are inactive; he is drowsy, sick, and moans when spoken to; his pulse is feeble and slow, and his surface chilled. Another is reduced to a condition of positive insensibility, casts his stomach at the time of the accident, but not afterwards; is very cold, has a large motionless pupil, a slow labouring pulse, not unfrequently snores loudly; one arm or side of the face may be paralysed, along with the bladder and lower extremity; the urine may or may not be permanently retained. The continuance of such a condition is one among the symptoms of a recoverable state, or its opposite. Perhaps there is an appearance of blood about the nares, or it has trickled in small quantity from the meatus auditorius. A third, after a severe blow or fall upon the vertex, is excessively violent and incoherent, requiring restraint to keep him in bed; the pulse bounds; the surface is not cold; there is a fixed pupil, but an expression of wildness about the eyes. Now, although any one of these conditions may exist, irrespective of any lesion whatsoever, being any possible form of shock or recoverable commotion, it may be the forerunner of acute membranous inflammation, or of that hopeless train of symptoms which indicate lesion of the substance of the brain. There are many cases modified in their course and character by habits of intemperance, or by a previous physical exhaustion, depraved secretions, or unfavorable mental conditions, which are from such causes additionally obscure under the effects of injury, so that it is as necessary to inform one's self of the previous habits and position of the patient, when summoned to such accidents, as it is where the disease is idiopathic, or the symptoms of a more slow and insidious nature.

[Mr. Travers always directs the head to be shaved; even where the mischief is slight it is a useful precaution. One sometimes discovers a wound or bruise by so doing which might otherwise have escaped detection for days; and it is a positive relief to the entire region, as well as necessary to the efficient use of topical means. A spirit lotion, or a diluted Goulard wash, with the liq. ammon. acetat., are amongst the best refrigerants commonly in use; but cold vinegar and water answers as well as any other application.

With regard to bleeding, abstraction of blood from the arm is of course at times indispensable; but often the slow oozing obtained by good leeches is not only more effective, but by far the safer practice. This more gradual operation of the depleting agent tells with great effect upon cases where the reaction is disposed to be tardy or incomplete.]

I have seen, proceeds Mr. Travers, patients slowly open their eyes and recover consciousness, after trickling leech-bleedings, who had been previously bled copiously from the arm without any evident good effect; and I believe that if the heart is too rapidly impressed by venesection *pleno rivo*, along with faintness, there supervenes increased congestion and fresh loading of the sinuses. The respiration, under such circumstances, becomes more and more impeded, or a fresh fit of violence comes on—excitement without power. Put by

your lancet in such a case, I should say, for you will probably kill your patient if you persevere. Watch especially the venous circulation; where the pulse will bear the pressure of the finger, order an application of six leeches to one or both temples (I have laid them on one by one), bathe the wounds so made with hot water, and now look narrowly to the breathing, the countenance, and the pulse. The soft murmur of child-like repose slowly takes the place of the former retarded or irregular respiration; the face is no longer suffused, nor the features working and distressed; the lips are slightly compressed, which lately hung in a semi-paralysed state, flapping, and loose; the pulse is now regular, 80° or 90° in the minute; the patient is reviving, and will reawaken to consciousness by and by, when the capillaries are sufficiently relieved through the influence of a regular pulmonic circulation; the blood is now more decarbonised, and when the heart in its turn begins to respond to its accustomed stimulus, the reaction may be deemed complete, and the patient is restored by gradually unloading, instead of suddenly emptying, the oppressed vascular tissues. As for counter-irritants, they are useful in most recoverable commotions of the brain, and their diffused action is at times very salutary. Where there exists an early tendency to excitement, they will sometimes control it in a remarkable manner, when active depletion fails, or is plainly inadmissible. They are especially operative in those morbid conditions where there seems to be a want of power to rouse and sustain the action of the capillaries. In recent head injury it is best not to irritate by maintaining a raw surface, or keeping the blister open, as it is called. The relief to be obtained by counter-irritants in such a case is not to be confounded with the proceeding indicated in chronic disease. The soreness and irritation of an issue are very undesirable here, and the exhaustion so produced may be of serious consequence to a person otherwise disposed to early convalescence. The regions best adapted for these applications are the crown of the head and the nape of the neck. The required irritation may be kept up for a period of six or twelve hours, according to circumstances. Blisters should never be used where there is reason to believe that the brain is lacerated, or irremediably injured, and on such occasions no other objection need be advanced than this, viz., that they are utterly useless.

On Purgatives and the Use of Mercury.—There is nothing more repugnant to a thinking mind than the very coarse and unreasonable practice of giving large and repeated doses of purgative medicine immediately after the occurrence of any severe accident, nor in head injury is such a proceeding always free from danger to the life of the patient. However plain the indication for laxatives may be, the practitioner should bear in mind that, whether it be a broken leg or a broken head, he has ordinarily to do with complicated effects. If the previous diet has been poor, and the means irregular, both in quantity and quality, there will probably be unhealthy or defective secretions, and loaded bowels; but for the same reason there will also have existed so much the less ability to resist the impression of severe shocks or sudden violence. Whenever stupor, nausea, with vertigo or bowel pain, are complained of, a very early recourse must be had to laxatives

at least. Castor oil, or the compound senna draught should be given as soon as the patient is in circumstances to swallow and retain the medicine. Mr. Travers does not, however, appreciate the necessity for an immediate exhibition of large doses of calomel in simple concussion. Slow bowels, or obstinate constipation, not unfrequently follow injuries of the head, and the biliary secretion is especially liable to defect or suppression; but such a state is not the production of a few hours, and some days elapse, ordinarily, before calomel need to be resorted to. When its use is indicated, it is better to give it in a full dose.

One reason why the older surgeons saw so many cases terminate in secondary and fatal inflammation of the membranes of the brain, was their inability to discover the stage and period of reaction, or, in other words, to determine the moment at which one or two decisive doses of calomel would often have prevented the necessity of more, and would have summarily stopped, if it did not anticipate those changes, which terminate in incurable effusion. In all the simple or less complicated cases, such an irritating medicine should be administered as will suffice to empty the loaded colon, and gently stimulate the alimentary canal. Healthy appetite, next to rest, is the surest and most unfailing sign of a return to health; it should be cherished and assisted, not destroyed by the operation of medicine. Injections per anum are not often required in the early treatment of head injury; but if the stomach is irritable, or there is reason to suspect a loaded state of the bowels, they may be administered with advantage. Some common salt, stirred into a pint of thin gruel, or a warm senna infusion, holding some sulphate of magnesia in solution, or an ounce of turpentine mixed with a quart of warm water and the yolk of eggs, are among the best forms, and are generally productive of immediate relief to the distended abdomen.

Mr. Travers next alludes to the value of mercury as a specific in cases of a complicated or obscure character. It often happens, after the lapse of a few days from the time of the mischief, that the patient remains in a very stupid condition; that he is with difficulty roused from his lethargy, and when taxed with inquiries, the expression or complaint is one of pain and uneasiness referred to the head generally. There is great intolerance of light; the skin is dry and hot; if the patient can be induced to protrude his tongue, it is not simply loaded, but coated with a white sticky secretion. The bowels, perhaps, have been copiously relieved by purgatives or injections; there is ordinarily no evidence of any loss of command in the sphincters, but the patient will part with the contents of the rectum often undesignedly, like a newly-born child. Sometimes the lethargy is uninterrupted; sometimes there is a state of moaning and extreme restlessness. The patient is indifferent to food; the pulse is quick and sharp. If there be contusion or wound, it must be narrowly looked to, and the manual interference of the surgeon is sometimes called for before any medicine can be of service; but the symptoms, as regards the brain and its investments, are those of irritation, and approaching inflammation. They are in contrast with the paralytic stupor of compression on the one hand, or the irregular and automatic movements of laceration on

the other. To say where the congestion of irritation ends, and inflammation commences, is especially difficult in the case of the brain. The two states are allied, so much so, that we might almost regard them as stages of the same disorder. Be this as it may, these are the cases, as a class, in which mercury will effect the greatest good, and it is the only remedy which will dissolve the mystery of doubtful emergencies. If a patient, under the prolonged effect of a severe blow or fall, followed by insensibility, without breach of the integument or cranium, as far as can be known, does not mend permanently and decidedly under the action of mercury pushed to a gentle ptyalism, all other means having failed, the case is ordinarily fatal, and the patient dies. Sometimes a rapid act of inflammation has passed the limit of relief before this only effectual remedy is employed, and its termination is evidenced by characteristic appearances after death, or the brain may have suffered from one of those lesions, whether central or superficial, which proves destruction, not by reason of its extent, but because the business of repair cannot be accomplished. Irreparable injury, however minute, operates directly to exhaust the innervation which controls the circulation and function of organs subservient to life. The restorative action of mercury does not involve, as a necessity, so much rapidity of action as would entail great or sudden exhaustion, and it is to be accompanied by such local measures as tend to subdue inflammation. At first it is not desirable to exhibit opium; but if there be an irritable mucous surface, or the subject is aged, or if there be signs of organic change in other parts, it is then right to use it in combination with calomel, and with or without an antimonial, according to circumstances. Calomel in one- or two-grain doses, at intervals of three, four, or six hours, is the best mode of giving mercury by the mouth. If deglutition is difficult, or the patient is indisposed to unclose the jaws, the mouth may be opened forcibly, and the remedy, in powder, smeared upon the tongue with butter or other unctuous matter. This proceeding, upon frequent repetition, sometimes induces sore or excoriated fauces, and such irritation may become so painful as to be actually prejudicial. Under such circumstances, the mercurial ointment may be rubbed upon the skin, so as to insure its speedy absorption. The effect of calomel, when once it has entered the system, is very marked in some cases of recoverable commotion. The copious and more regular relief of the bowels, the clear indications of returning sense and power conveyed by gesture and articulation, the disposition to take food, the compressible pulse and tranquil respiration, all point to the steady and progressive relief of the brain and its investments. There is still some complaint of pain; and in bad cases, for a time, a paralytic condition of one of the nerves of sense—as smell or hearing—is observable, there is perhaps ptosis of one eyelid, an arm is benumbed, or one side of the body feels colder than its opposite; but these effects are transient, or at least may be permanently relieved, if not entirely removed by careful after-treatment.

On Irritation and Inflammation—Question of Operation—Apoplectic Cell.—The action terminating in the formation of a circumscribed abscess in the substance of the brain is an inflammation, and the re-

tained matter, so produced, sets up an *irritation* of that organ. The angular depression, or projecting spiculum of a cracked internal table of the skull, produces irritation which, if it continue, provokes *inflammation*, evidenced by pain and febrile excitement during life, and by the appearances of thickening and effusion after death. If the subject of cerebral *irritation* be exposed to extreme measures of depletion, a fatal exhaustion may supervene, but they are wholly inadequate to relieve such a condition, either in its cause or consequences.

The point at which irritation assumes the modified character of compression is sometimes difficult of determination; but the symptoms which call for interference on the part of the surgeon seldom admit of doubt. We are not, on these occasions, to wait for laboured or sonorous breathing, a fixed pupil, and the course of direct pressure. Where there is a neuralgic or paralytic state of one or more members of the body, with slow and imperfect perception, impaired sense and memory, difficulty of speech and deglutition, atrophy, or evidence of a permanently-disturbed circulation, an operation is as plainly called for as though the local signs of compression were palpable to the sight and touch. Tenderness or pain on pressure, circumscribed and persistent, point to the site of such operation, whether it consists in simple division of the pericranium, or trepanning of the skull. In these cases of the remote effect of injury, the presence of matter, long spicula, diseased or necrosed bone, with meningeal reparation, nay, even a slight thickening of the membrane, may give origin to symptoms which will usually be found to correspond in intensity to the amount of local change. In recent cases of fractured skull, Mr. Travers considers the rule of not operating where there are no symptoms to be a good one. A departure from this practice is certainly justifiable in the case of wound, with fracture and depressed bone. Be the symptoms what they may, displaced and exposed fragments should be elevated, if not removed.

Chronic apoplectic lesion, though a purely local change, depreciates the quality of the nervous influence, but does not directly interrupt its course and operation; it is the crisis of a slow morbid action, of which the other organs of the body have all had warning, and for which they are in some degree prepared. This is not the case where the system has been taken by surprise by sudden lesion of a healthy structure. Laceration of the substance of the brain produced by injury is always fatal. In the first case, the powers of life having themselves undergone a previous diminution, are no longer capable of being very suddenly impressed by the occurrence of a minute lesion which, though critical, is but another stage or step in the progress of existing disease. Apoplectic cell, therefore, unless it be large and rapidly formed, does not alarm the centres like a sudden tearing of the sound tissue. There is no immediate counter-action excited for purposes of limitation or repair; but the case is otherwise after recent injury. There the resistance and reaction commence at once and vehemently, though ineffectually, for the heart and arteries now no longer respond to the necessities of an organ, which, under the circumstances, they are unable to restore. As the connexions of the brain are universal, it may be approached circuitously, as well as by

the direct road; and sometimes with more advantage, where there exists a tendency to relapse. Symptoms can never be too closely watched, nor power too carefully estimated, in dealing with a part so prone to rapid and dangerous reaction.

Art. 52.—*On Tumours of the Eye and Orbit.* By Dr. Jacob.

(*Dublin Medical Press.*)

Dr. Jacob recently drew the attention of the Dublin Surgical Society to two tumours, one removed from the eyelid, the other from the eyeball, of patients who had been under treatment by himself in the City of Dublin Hospital. It had been his intention, to have drawn up a paper giving a more detailed account of the history and treatment of these tumours, together with a statement of the opinions which, from his observations of these and other cases, he had formed with respect to the malignity or non-malignity of tumours of the eye and orbit; but he thought it a favorable opportunity for stating his views, as he might thereby induce other members to communicate the results of their experience upon a subject which was, to a certain extent, still involved in doubt and uncertainty, so as to enable them to obtain a better insight into the nature of malignant and non-malignant disease. The preparations to which he referred he exhibited in the manner which he had adopted at lectures for many years, on account of its great convenience, namely, by means of spherical glasses. These glasses were of very great value when it was requisite to prepare anatomical objects for extemporaneous use; indeed he regarded the plan of macerating natural and morbid structures in water, and then investigating their appearances by means of these hollow spheres, as vastly superior to the exhibition of them in spirits, which could not but injure the flocculent and delicate surface of the specimens. Their application was very simple, and from his own lengthened experience of their utility he was somewhat surprised that they had not come into more general employment.

The first of these preparations which he had to exhibit was a black spongy tumour about two inches in diameter, which grew from the front of the eyeball and lapped over the eyelids in every direction, so as nearly to close the whole opening of the orbit. It appeared to have been compressed by the bandage, and bled slightly when the adhering dressing was removed, but its surface exhibited something of a lobulated appearance. On drawing it forward, it was found to adhere to the front of the eyeball, growing as if from a cylindrical stalk tightly embraced by the eyelids; he of course prepared to remove it by first cutting off the tumour, and then removing the contents of the orbit if the disease extended backward. To his surprise, however, on drawing the knife across the stalk of the fungus, he found that he cut across an eyeball to which the disease had not extended. It, in fact, grew from the front of the eye, and evidently from the conjunctiva; covering, not only the cornea, but the conjunctiva, covering the anterior part of the sclerotic up to the fold where it is reflected to line

the eyelids. It was, in fact, a cutaneous or tegumentary growth from the entire surface of the anterior part of the eye—the sclerotic, choroid, iris, retina, and humours being sound. The divided parts suppurated and healed kindly, and the woman left the hospital in a few weeks free from disease. Sufficient time had not yet elapsed to enable him to pronounce as to the nature of the disease, or whether it was to be considered malignant. Its black colour, spongy texture, and slightly lobulated appearance, was not enough to convince him that it belonged to the class of fungoid growths of fatal nature, and he believed that if allowed to take its course it would not have destroyed life by malignant implication of the surrounding parts, although it might have terminated in death by forming a great mass which never could be arrested in its growth or reduced in its dimensions by medical remedies.

The next tumour had been removed from the eyelid by Mr. Barrow, and on account of its black appearance some persons might suspect it to be of a malignant nature; but he did not think they would be justified in assigning a malignant character to such growths merely on account of their colour. The colour of a diseased mass does not afford a clue to the true nature of the disease, and the dark hue of the tumour he referred to was no proof of its malignity. He had found deposits of black colouring matter to occur under the conjunctiva of the eye in elderly persons, where no disease whatever existed. Again, these tumours were not to be considered malignant merely because they would not heal. It was scarcely necessary to remind them that ulcers were often met with which would not heal, and warts which would not cease to grow under any species of treatment, and yet no one thinks of comparing such ulcers and warts with fungus hæmatodes, carcinoma, or any other form of malignant disease. It was their nature to grow and spread, and it was impossible to get rid of them except by the aid of the knife or escharotics; still, however long they continued, the constitution would not be contaminated by them, and he therefore could not see the propriety of calling them malignant diseases.

The third preparation he shewed to the society was a beautiful specimen of another form of disease. In this case the tumour grew from the lower lid, and, as the patient was an aged man, he was inclined, in the first instance, to set it down as an example of real carcinoma. However, on making a closer examination, and having carefully cleansed the tumour, he discovered that it had none of the usual characteristic appearances of cutaneous cancer. The surface of the tumour was covered with a cream-coloured structure consisting of a quantity of coarse fibres of fully one eighth of an inch in length, which stood out perpendicularly from the surface. When this cream-coloured structure was removed, the surface beneath presented a very different appearance. This surface exhibited no trace of ulceration, but was the seat of a peculiar organization which was capable of throwing out the cream-coloured growth he had alluded to. It was a vascular surface surrounded by an elevated welt. What was the nature of this tumour? At first sight it was pronounced to be a case of carcinoma, and that it would be necessary to remove it; in a short time, however, it assumed quite a different aspect, acquired a

more mild appearance, and there being no contamination of the glands of the neck, it occurred to him that it was not a true malignant tumour. It was ultimately, nevertheless, resolved that it should be removed, and accordingly it was excised by one or two strokes of the knife. There was very little bleeding during the operation, but unfortunately the patient, who was nearly 80 years of age, was attacked with erysipelas in the face, and died at the end of a few days. Now he believed the disease, in this instance, to have been nothing more than a gigantic wart, and that the tumour did not in the least degree partake of the nature of carcinoma. The yellow structure composed of perpendicular fibres, and forming a kind of brush of bristling fibres on the surface must be viewed as a cuticular or epidermoid growth.

Some years ago, Dr. Jacob had described a species of ulcer which attacked the eyelids, and which was rendered remarkable by the fact that it could never be made to heal; and yet the system was never contaminated by it, though in some cases he had known the disease to exist for twenty years. Dr. Jacobs' only object in bringing this subject forward at present was to endeavour to elicit inquiry, and decide as to what description of tumour or growth they should restrict the terms "cancer" and "malignant disease," because now-a-days these terms were often applied to structures and growths which were perfectly free from malignity; as, for example, to those ulcers which will never heal.

Art. 53.—*Essay on Syphilitic Sarcocele.* By John Hamilton, Esq., Surgeon to the Richmond Hospital, Dublin.

Syphilitic Sarcocele is generally a late symptom; it may occur from one to six years, or even more, after infection. There are two forms which it is important to distinguish, as they require very different treatment. These the author names, the simple syphilitic sarcocele, and the tubercular syphilitic sarcocele.

1st. The simple syphilitic sarcocele is met with in persons of healthy constitution; and when accompanied, as it usually is, by other secondary symptoms, they are regular, well marked, and uncomplicated. As attendants on this form, the author has seen the mottled, papular, pustular, and scaly eruptions, and those dusky red spots, a little raised, and often a little scurfy, which were called by the older writers syphilitic blotches; iritis; the more healthy (if such a term is allowable) forms of inflammation of the bones and periosteum; and of ulcers in the throat. Though a late symptom, yet between it and the primary infection, there is generally a chain of connexion by some well-marked secondary affections. When the sarcocele is unaccompanied by these, their previous existence and history help to distinguish it from the chronic sarcocele, from which there is otherwise no local difference or mark of distinction.

In the simple syphilitic sarcocele, the testicle will be found enlarged to the size of a lemon or turkey egg, of an ovoid, or pyriform shape, sometimes flattened at the sides; either uniform on the surface, or with the epididymis distinguishable as an irregular ridge along the

back; hard, particularly in the situation of the epididymis; heavy, with the integuments of the scrotum of a dusky red; generally neither tender nor painful, except that the hanging weight causes a feeling of uneasiness in the loins and inside the thighs. In this respect it differs remarkably from gonorrhœal orchitis, where the tenderness is so exquisite and the pain usually so great. The author has never met with the nocturnal exacerbation of pain noticed by Sir Astley Cooper and Mr. Curling, the last of whom mentions "the testis becoming occasionally more tumid and painful during the evening exacerbation," as a point of distinction between venereal and common chronic sarcocele. The essential symptoms, therefore, of the simple syphilitic sarcocele are, its occurring in persons of healthy constitutions, with the more simple and manageable forms of secondary symptoms, its large size, and slow progress.

In this form the disease generally only affects one testicle, and he has never seen suppuration occur. A fact essential to be remembered is, that in syphilitic sarcocele, whether simple or tubercular, there is almost always effusion of water into the cavity of the tunica vaginalis, constituting hydro-sarcocele; a small circumscribed hydrocele of the cord also is not uncommon. In every case of moderate-sized hydrocele, therefore, too much care cannot be used in examining if there is enlargement of the testicle; otherwise, in drawing off the water, the trocar might be passed into the body of the testicle. The tubercular syphilitic sarcocele is much more common, and differs materially, both in local and constitutional symptoms, from the simple form. The testicle is enlarged from two to four times the natural size; but the increase of size is generally not remarkable, of very irregular shape, so that the ordinary form of the testicle is often entirely lost, presenting instead an uneven, hard, knotty mass, in which it is impossible to distinguish the body from the epididymis. At other times the irregularity is seen to arise from the enlarged and indurated epididymis, which gets of a great size compared to the body of the testicle, that remains but little altered, and readily distinguished from it. In the gonorrhœal orchitis, we well know that the inferior globus of the epididymis is usually the part most enlarged and hard, and often keeps so long after the testicle has recovered; whereas, in the tubercular syphilitic sarcocele, enlargement of the upper globus of the epididymis is more frequently met with, sometimes excessive and disproportionate to the other parts of the testicle. The reason of this may be, that in gonorrhœal orchitis the inflammation extends from the vas deferens at the inferior part of the epididymis, to the cellular tissue external to it, with the effusion of lymph, causing swelling and induration; whereas, in the tubercular syphilitic sarcocele, the swelling of the superior globus of the epididymis depends on the presence of a tubercle imbedded among the vasa efferentia, of which it is constituted. We now and then find the testicle not quite so irregular, particularly in the beginning. The author has met with it of a columnar shape, hard, but quite even; after some duration, however, it almost always becomes uneven and knotty. It is seldom either persistently painful or tender, and only inconvenient when large, from its weight causing pain, as in other diseases of the testicle, in the loins. From

the small amount of inconvenience, the author has known patients quite unaware that they had any disease of the testicle. Both testicles are usually affected, and one is found to be worse than the other; and when both have been long diseased, and the disorganization great, he has ascertained that sexual desire has been absent, and that neither erections nor seminal emissions took place; both returning, however, as treatment effected the restoration of the testicle to the normal state. The constitutional symptoms are very characteristic of the effects of the syphilitic poison in bad and scrofulous constitutions. The patient is sallow and broken down in appearance, and presents the worst form of secondary symptoms, or those which have been, from the late period of their occurrence, appropriately termed tertiary symptoms by M. Ricord. Soft nodes, mostly on the cranium, with caries of the bones; sore throat, either the large foul ulcer at the back of the pharynx, deep, and more or less circular, or that form into which struma largely enters, and which the author believes to be of a lupoid character, marked by irregular ulceration at the back of the pharynx, with copious secretion of yellow muco-purulent matter, extending to the arches of the palate, to the soft palate and uvula, and causing more or less destruction of these parts; the subcutaneous tubercle, sometimes indolent, sometimes ulcerated, with the usual characters of lupoid ulceration; the annular, or serpigenous pustulo-crustaceous eruption, spreading in rings, or some less-regular shape, of quickly-scabbing superficial ulceration. The author has found this eruption and the soft cranial node such constant attendants on the tubercular syphilitic testicle, that whenever a patient with them presents himself, he at once looks for disease of the testicles, and often finds it, although the patient himself, unaware of its existence, had made no complaint.

As has already been said, the author has never seen the simple syphilitic sarcocele suppurate; but in the tubercular form the inflammation does occasionally, though rarely, pass into slow suppuration, which, after the matter has escaped, terminates either in fistulous openings discharging thin matter, or in the protrusion of a fungus. In delicate, scrofulous men, we may have suppuration, fistula, and fungus, from inflammation of the tubercular syphilitic sarcocele; but in healthy constitutions, and in the simple form, such terminations are scarcely ever met with.

The pathological changes observed in the testicle are twofold. First: a disposition to form lymph of a pale yellowish colour into the interstitial cellular tissue external to the tubuli testis, as well as, probably, as into the tubuli themselves. For if it was not into the cellular tissue external to them, we ought to be able to see the arrangements of the convoluted tubuli, which we cannot, the section appearing homogeneous, with the exception of some fibres shooting through it. The author took the sections of two testicles removed for lipoma, and macerated them till putrefaction began. Though when first put into the water there was no appearance of tubes, the surface perfectly smooth, gray, and uniform, yet, when removed, the lymph had been so softened away by the putrefaction, that the seminiferous tubuli were quite distinct. This proves lymph to be effused external to the

tubuli. On the other hand, if it was not deposited also into their cavities, the structure of the part would be less firm; for as it is likely that the seminal secretion in them would antagonise their complete obliteration, when they were divided, their small apertures, though not visible to the naked eye, would yet give a looser appearance to the section than if there was a deposit of firm lymph in the hollow of the tubes, and would be discernible by a good lens. The author thinks this uniform deposition of firm yellowish lymph is the pathological condition in those cases which he has named simple syphilitic sarcocele; but as the patients are otherwise healthy, and usually get well, opportunities of examination are rare.

2dly: a much more common pathological appearance of syphilitic disease of the testicle is the presence of one or more tubercles in the epididymis or body of the testicle. We not only meet with it more frequently, because the tubercular is more common than the simple syphilitic sarcocele, but also because the disease of the testicle is sometimes only a small part of a general state of disease, under which the patient sinks, and we therefore have more frequent opportunities of making post-mortem examinations. These tubercles are of a yellow colour, of a consistence rather less firm than that of coagulated lymph. Very small at first, they gradually enlarge, and, according to their duration, may vary in size from that of a hemp-seed or split-pea to that of a chesnut, or even larger. They have a well-marked cyst, which can, by careful dissection, be separated from the yellow inorganic substance contained in them, and from the glandular substance of the testicle in which they are imbedded: the yellow substance within the cyst has sometimes a laminated arrangement. It is proved to be inorganic by not receiving any injection when the testicle has been most successfully injected. The bright pink of the one offers a pretty contrast to the yellow colour of the other. In some of the preparations the author has examined, the yellow tubercle has gradually so increased as to have caused absorption of the glandular structure of the testicle, and finally to have taken its place.

When the progress of the yellow syphilitic tubercle is not stayed by treatment, after having attained a certain size, it begins to soften in the centre, or at the side nearest the surface of the testicle, where it causes an inequality; adhesion takes place between the tunica vaginalis testis and scroti; and at last these structures, with the tunica albuginea, give way, and the surface of the tubercle becomes adherent to the skin of the scrotum. Suppuration of a slow indolent character ensues; the abscess bursts, and discharges very little matter and very thin, and terminates in fistula or lipoma, and total disorganization of the testicle; the same disorganization may ensue without any suppuration. The tubercles are absorbed, but at the same time the glandular structure of the testicle disappears; nothing remains in the place of the atrophied testicle but a hard, irregular, fibro-cartilaginous, contracted mass, in which ossified matter is at times deposited.

The treatment of the two forms of syphilitic disease of the testicle is not the same; each requires a mode of treatment peculiar to itself. In the simple syphilitic sarcocele, a steady and somewhat protracted course of mercury should be employed; it is, in fact, the only certain

means of cure. The author has frequently seen the non-mercurial treatment tried, and has observed it to be very unsuccessful; and that mercury had to be given at last, after much time had been lost, and the integrity of the testicle jeopardized. Five grains of blue pill, or five grains of mercury and chalk, guarded with one eighth of a grain of opium, or, where the bowels are inclined to be irritable, one fourth of a grain, should be taken three times a day; or the patient should rub in daily one drachm of strong mercurial ointment, till the mouth is well affected, the gums ulcerated, and salivation induced. The mercurial action should be sustained for six or eight weeks; longer than the latter period, is generally unnecessary, for though the testicle may not be, at the end of this time, quite restored, yet the improvement commenced during the exhibition of the mercury goes on after its discontinuance, till the testicle has regained its natural state. The same applies to the hydrocele. The author has known the water remaining after the discontinuance of the mercury to be gradually absorbed. The other secondary symptoms accompanying the sarcocele, eruptions, affections of the bones, or of the throat, generally yield rapidly to the treatment, and have quite disappeared while the testicle continues hard and enlarged. The first sign of amendment in the testicle is observed in the body, which becomes soft, and when it could not be previously distinguished from the epididymis, the whole forming one ovoid or pyriform mass, it can now be made out, and finally gets quite natural in size and consistence, while the epididymis continues hard and enlarged. After the mercury is discontinued, from three to five grains of the hydriodate of potash thrice daily for a fortnight assist in completing the cure. With regard to local means: when there is pain and tenderness, the application of a few leeches, and the acetate of lead lotion are useful; and when these are not called for, we may direct a little mercurial ointment to be rubbed over the scrotum, or spread on a piece of lint enveloping the testicle, and kept in its place by a suspensory bandage. Later, when the epididymis continues indurated, the iodine ointment rubbed on the scrotum, at the same time that the hydriodate of potash is given internally, is a valuable discutient. The iodine ointment of the Pharmacopœa is too strong for the tender skin of the scrotum, which it excoriates and causes much pain, it should be diluted at first with an equal proportion of lard. When there is no pain or tenderness, the author does not think the recumbent position necessary, or confinement to the house when the weather is fine. Strapping, so useful in the later stage of gonorrhœal orchitis, he has not found of any service in syphilitic sarcocele.

If there is water in the tunica vaginalis in small quantity it may be left alone, as it is usually absorbed under the treatment; but if it is in larger quantity, it had better be drawn off; its abstraction relieves the absorbents, lessens the inconvenient bulk of the swelling, and assists in ascertaining the exact condition of the testicle. A small trocar and canula should be cautiously used. When the quantity is large, the operation may be required a second time; but after the testicle is well it rarely reaccumulates.

Some surgeons have great confidence in the hydriodate of potash in curing syphilitic diseases of the testicles, and the accompanying symp-

toms in broken constitutions. The author's experience leads him to be less sanguine. He has in such cases tried this medicine either simply in water, or with the infusion or compound decoction of sarsaparilla, and in fair doses for several weeks without completely curing the disease. The constitution and the local affections have at first exhibited rapid signs of amendment, but after a time this improvement has stopped. He does not deny that cases of the tubercular syphilitic sarcocele may be cured by the hydriodate of potash alone; but after having tried it for weeks in some cases, he has only succeeded in procuring partial amendment; and has met with many cases where this remedy has been tried for many months in doses of ten grains, two or three times a day, with no better success. The plan which he recommends, and which, except where the testicles have been totally disorganised, he has never known to fail, is a combination of the mild mercurial treatment with the administration of the hydriodate of potash at the same time. The latter by its beneficial influence on the constitution, enables it to bear the mercury which radically cures the effects of the syphilitic poison, and expels it from the system. Fifteen grains of the hydriodate of potash are dissolved in a pint of the compound infusion or compound decoction of sarsaparilla, of this the patient takes a third part in the morning and at mid-day, and ten grains of the blue pill at bed-time. In a week or ten days the gums get a little sore, when the blue pill may be reduced to five grains at night. He should go about as usual and be a good deal in the open air, and the diet should be generous. The dilute iodine ointment may be applied to the testicle.

Art. 54.—*Cases of Rupture of the Long Tendon of the Biceps.* By Dr. Bellingham.

(*Transactions of the Surgical Society of Ireland;* published in the *Dublin Medical Press.*)

Case 1.—James Healy, a baker, æt. 55, admitted into St. Vincent's Hospital, September 5, 1849, for an injury of the right shoulder. He gives the following account of the accident. In his business he is obliged to carry heavy sacks of flour from one part of the premises where he works to another: five days ago he was carrying a sack of flour upon his left shoulder, and when he came to the place where it was to be deposited, he was gradually letting it down to the ground behind him, as he was accustomed to do, by bending his knees and stooping backwards, holding the mouth of the sack in front with both hands and advancing them over the left shoulder: when the sack came near the ground, he felt something suddenly crack in the right shoulder, followed by very great pain in the part, and perfect inability to move the arm, which persisted up to his admission.

He applied to a general practitioner, who ordered a large blister to the shoulder, and the whole surface is now sore from its effects.

The patient supports the elbow of the injured side with the left hand: he complains of severe pain in the shoulder, which extends along the biceps muscle to the bend of the arm, and reaches to the thumb.

On examination, the outline of the shoulder is not as well marked as on the opposite side, in which the muscles are very well developed:

it is more rounded, and the head of the humerus seems to be more in front; the belly of the biceps muscle is more lax than upon the opposite side. The elbow can be brought to the side without increasing the pain much; but moving the elbow from the side, or raising the arm, causes very great pain; pressure upon the belly of the biceps muscle, or upon its tendon at the bend of the arm, is very painful: in both instances the pain is referred to the shoulder. On moving the arm a loud crepitus is heard, which, the patient says, he has remarked himself.

The arm was put in a sling, and perfect rest of the limb enjoined.

Sept. 11th.—The blistered surface is now healed, which permits of a better examination of the parts. The patient suffers no pain now unless the arm is moved, or unless pressure is made upon it; he can bring the elbow to the side without inconvenience, but moving it from the side causes it pain; he could raise a small object from the ground with the hand on the injured side, but cannot raise his arm from the side. The crepitus on moving the joint is very well marked; it is much louder than the crepitus and fracture, and more moist. The belly of the biceps muscle is prominent and softer than that of the opposite side. He suffers pain when pressure is made on it, or when its tendon at the bend of the arm is pressed, or when the wrist is rotated and the hand supinated.

He does not now support the elbow with his other hand.

The arm has been kept in a sling, and the limb has been maintained perfectly at rest.

13th.—The patient can now raise his arm from the side, and only suffers pain when pressure is made over the course of the biceps muscle, from the shoulder to the elbow; this is likewise much less severe than formerly. When the arm is in a straight position, the belly of the biceps still feels flaccid.

20th.—The patient can now raise his hand to his head, and was made an out-patient, being the 20th day from the accident. He did not return to the hospital subsequently.

Case II.— —— Sherlock, a servant, æt. 45, a stout, muscular man, presented himself at St. Vincent's Hospital, Sept. 11, 1849. He states that yesterday evening he fell upon the right shoulder, and immediately suffered severe pain, and almost total inability to use the arm, the pain being greatly increased by motion; he supports the elbow with the hand of the opposite side, and retains the arm in a half-bent position.

On examination, there is neither mark nor bruise upon the shoulder; it has a more rounded form than the opposite one, the outline of the acromion not being as distinct, and the head of the bone appearing to be nearer to it, and slightly more forward than upon the opposite side. He suffers pain when the elbow is brought close to the side, but much more when it is removed from the side, or attempted to be elevated; pressure made over the groove of the biceps causes very severe pain; pressure upon the belly of the biceps, and upon its tendon at the bend of the arm, also causes pain, as does rotating the radius by supinating the hand; when at rest, the pain is limited to the shoulder. The fibres of the biceps have a spasmodic quivering

motion while examining the arm, and the belly of the muscle is prominent, but can scarcely be said to be more so than on the opposite side, the muscular system being remarkably well developed; to the feel there is scarcely any difference from the opposite muscle. No crepitus is felt on gently moving the arm; but motion occasions so much pain, that this was not persisted in.

He was directed to be bled from the opposite arm, to apply leeches to the shoulder, and to foment the parts well afterwards; to take some purgative medicine, and to keep the arm in a sling.

13th.—He was unable to purchase the leeches, so contented himself with fomenting the shoulder, and keeping the arm in a sling. The pain is much relieved; the patient has more power over the arm, and does not now support the elbow on the injured side with the opposite hand. About a fortnight afterwards, when the patient was seen again, he had considerably recovered the use of the arm.

Case III.—Mary Cusach, æt. upwards of 70, a thin spare woman, presented herself at St. Vincent's Hospital, January 7, 1845. She states that thirteen days ago she received an injury by a fall upon the right side; is not sure if her shoulder came to the ground, but the right side of her face presents evident traces of having done so. She did not experience the sensation of anything having given way in the shoulder; but immediately after the accident, she suffered much pain in the shoulder, extending to the elbow, and has been quite unable to make any use of the arm since. The parts soon became swollen, and she has been applying fomentations and other remedies to the part.

On examination, the integuments, from the shoulder to the elbow, along the inside of the arm, and in the course of the biceps muscle, are discoloured, having various shades of green and yellow, as if the part had received a blow, and the effused blood was beginning to be absorbed. She complains of pain referred to the shoulder, and from the shoulder to the elbow, along the inside of the arm; this is increased by moving the joint, or by supinating the hand. The biceps muscle is flaccid, and the pressure along its whole course causes pain. The humerus appears to be drawn slightly upwards and inwards, nearer to the acromion process; but the outline of the shoulder differs little from the other. The patient can bend the elbow now, although not previously, and can lift anything light; but she cannot bring the arm to a right angle with the body, much less raise it above her head; and when the arm rests by the side, she finds it impossible to put it behind her back.

She was directed to apply fomentations to the shoulder, and to keep the arm in a sling.

This patient did not present herself a second time at the hospital. In two of the cases just detailed, the injury was produced by a fall; but in neither was there any mark or bruise upon the shoulder. In only one was the sensation experienced of something cracking or giving way in the shoulder; in one a crepitus in moving the arm was very distinct; in another the belly of the biceps had a quivering motion when examining the part. In the two patients who were seen earliest after the accident, the position assumed was very characteristic: they both supported the elbow of the injured side with the

other hand. In all three, total inability to use the arm, with pain, greatly increased on motion, immediately followed the accident. In all, pain was felt along the course of the biceps muscle, from the shoulder to the bend of the arm, which was increased by pressure, or by supinating the hand. In all, the elbow could be brought near the side without much inconvenience; but in abducting the arm, or raising it, caused much pain; and in all, the belly of the biceps was flaccid; in the females, in addition, the course of this muscle was marked by ecchymosis.

Art. 55.—*On the Pathology of Nævi Materni and Dilatations of the Vessels of the Integument.* By Holmes Coote, Esq.

(*Medical Gazette*, March 8, 1850.)

Mr. Coote offers a few observations upon the intimate structure of those spots or markings of the integument known as nævi materni, because he attributes the very great discrepancies in opinion, both as to the symptoms by which they are characterised, and the course which they ultimately take, to a want of accurate information as to the immediate seat of the disease in its several varieties. The word nævus, he informs us, which corresponds exactly with "mother-spot," or "Mutter-mahl," is the Latin expression for any congenital mole or mark on the body, and was formerly applied to two very different conditions of the integument—the one, a simple discoloration, dependent upon the accumulation of pigment cells under the cuticle; the other, a soft red spot, caused by a varicose or dilated state of the cutaneous blood-vessels. Of the former but little need be said; it is, as Dr. Bateman described it, a superficial stain-like spot, of yellowish-brown or brownish-black hue, and sometimes covered with long hair, when it resembles, in a slight degree, the skin of the rat or mouse; always congenital, and enlarging only in accordance with the growth of the body, it rarely requires surgical interference. The great pathological point of interest connected with this subject is, that when melanosis attacks the skin as a primary disease, it is always in one of these dark-coloured spots or moles that the morbid accumulation of pigment is first observed. The knowledge of this fact should deter us from unnecessarily irritating them by acupuncture needles or by caustic.

The latter, or vascular nævus, designated in modern surgical works by the barbaric term of "teleangeiectasis," consists of a congeries of blood-vessels, and has its seat either in the cutis or in the subcutaneous areolar tissue, where it was described by Petit under the name of "loupes variqueuses." Infants are frequently born with these nævi; but in a very great number of instances the disease is first noticed a few days or a few weeks after birth as a bright-red spot, perhaps not larger than a pin's head, either imbedded in, or projecting from the skin. The cutaneous nævus, of more florid red colour, the more superficial its seat, resembles, as it enlarges, a small thin-walled bladder, filled with blood, and surrounded by dilated and tortuous vessels, visible through the delicate transparent integument. By

pressure, which is the more easily effected if the nævus be placed over a bone, the blood can be squeezed out, when the natural colour of the skin is partially restored; but soon the blood is seen re-entering the dilated tubes, and its bright-red colour is restored. After a time it becomes slightly raised above the level of the skin, and extends deeper into the subjacent parts. The superficial vesicles may give way from a blow, or from some strain or effort, and hemorrhage will ensue; but this is easily controlled by slight pressure, the blood trickling down without force, as from an inelastic-walled sinus. The same remarks apply to nævi of the mucous membrane of the eyelid or mouth. In these situations, however, their growth is more rapid, and they are more elevated, and extend deeper.

The subcutaneous nævus which, though seated in the subcutaneous areolar tissue, always involves the cutis to some extent, consists of a dilatation of those vessels which pass from the deeper part to supply the skin. When of any size, it appears as a soft elastic tumour, frequently of bluish-black colour over the most prominent part; pressure diminishes its size much, but the blood can seldom be squeezed out entirely; and when the pressure is relaxed, the blood slowly distends it to its former condition. When elevated, it is painful upon pressure, as may be known from the fact of the child crying and endeavouring to remove the part from the examination of the surgeon, or from its never lying upon the side of the disease during sleep. After a time, it may form for itself a cyst of condensed areolar tissue, which, though capable of yielding slowly, puts a limit to any sudden distension. Though small at first, and often uncertain as to the period of activity, these nævi never lose their disposition to increase. The definition of nævi, given by Lassus, and quoted by Mr. S. Cooper, is graphic and correct, namely, that "they are an organic malformation of the skin, the natural texture of which does not exist, but a plexus of vessels is substituted for it, not endued with the natural sensibility of the cutis itself." But the inference drawn from this definition, that "they generally continue stationary during life, and may be regarded rather as deformity than as disease," is, Mr. Coote observes, incorrect in the extreme, and is only explicable upon the supposition that the pigment stains are referred to in the latter sentence. There is scarcely any exception to the rule that a true vascular nævus, once formed, will grow, with different degrees of rapidity and at irregular intervals, as far as we know, indefinitely.

The author continues—"Mr. Cooper observes that the nævi familiar to us as vascular cutaneous or subcutaneous swellings, occurring usually in those parts of the body where the circulation is most active, namely, the skin of the face and head, the chest, or upper extremities, are either of the same nature as the disease well known by the name of aneurism by anastomosis, or bear a considerable resemblance to it. Now, under the name of aneurism by anastomosis, Mr. John Bell described "a species of aneurism resembling some of the bloody tumours which appear in new-born children—a disease originating from some accidental cause, marked by a *perpetual throbbing*, growing slowly but uncontrollably, and rather irritated than checked by compression." To how many has it happened to witness in young children,

patients of this hospital, pulsating nævi connected with the ramifications of arteries? I cannot recall to mind a single case, and am consequently at a loss to appreciate the statement of the late Mr. Liston, that "some of the large nævi in children pulsate synchronous with the heart's action. A pulsating tumour, however, occurs, as Mr. J. Bell remarked, in adults, and in those situations where the circulation is most active, such as the integuments of the head or face, and more particularly the lip."

As aneurisms by anastomosis are very uncommon, he briefly states the particulars of a case which he had the opportunity of seeing and examining three years ago. "A gentleman, æt. 40, consulted Mr. Lawrence for a pulsating tumour, occupying the right half of the lower lip. He stated that it was congenital, and had increased slowly up to the present time. Some time ago, the right facial artery had been tied by another surgeon, and during the operation profuse hemorrhage took place from a vessel towards the side of the tumour. No perceptible diminution in the swelling ensued, a result which will not surprise any accustomed to view, in an injected subject, the free anastomosis of the coronary arteries of the right and left side of the face. Mr. Lawrence extirpated the whole pulsatory mass with the knife, Jan. 11th, 1847. There ensued very little more hemorrhage than would have taken place after extirpating a cancer of the lip. The ends of the coronary arteries and of one smaller vessel were tied, and the patient recovered without an unfavorable symptom. Mr. Lawrence kindly gave me the tumour to examine, and I injected it with mercury. It was composed of arteries, in the natural state of the diameter of a large pin, dilated for about an inch of their course into great sinuses or canals, the cavity of which equalled that of the radial artery in the adult. They freely communicated one with another, and were lodged in the natural structure of the lip, to which they were attached by loose areolar tissue. Upon the divided surface there were the cut orifices of eight arteries, some of them of considerable size. The walls of these dilated arteries were thin, but I failed in detecting anything remarkable by microscopic examination. Here, then, is an instance of aneurism by anastomosis. It is a pulsating swelling connected with a few arteries of some considerable size. It is obvious that there exists a wide difference between this disease and the nævus of infants, as commonly seen, which consists in a pulseless red vascular spot, seated in or under the integument, and composed of dilatations of the capillaries which constitute the skin."

Therefore, the author considers *aneurism by anastomosis* to consist in a dilatation of several arteries for a certain part of their course. *Nævus maternus* is composed of a congeries of capillaries. The two diseases are essentially distinct, and require different modes of treatment.

There remains a third variety of vascular tumour, the first case of which fell before the author's observation in the year 1845.

"A delicate young man, æt. 20, an undergraduate at Oxford, consulted Mr. Lawrence for an oblong, pulseless, blue-coloured, vascular tumour, of four years' duration, situated in front of the abdomen, over the inferior ribs of the right side. It was firm, having been frequently

cauterised. The blood, when squeezed out by pressure, did not readily flow in again.

"The patient attributed the disease to the rubbing of the braces; indeed, his attention was first directed to the part by the irritation which he experienced in walking. The whole mass, including some diseased integument, was extirpated by the knife; one small cutaneous artery only was tied, but the bleeding was inconsiderable. The tumour, upon examination, was found to consist of a number of tortuous and dilated vessels, which I concluded, from the thinness of their walls, the collapsed state of the cut extremities, which were healthy, the want of pulsation during life, and the general varicose appearance of the part, to be *veins*. They contained a thin watery yellowish-red fluid, which, under the microscope, was seen to contain blood-discs in small quantity, altered in shape, and jagged at their edges; granules, probably the remains of decomposed blood-discs; epithelium, and fatty matter.

"The wound healed without a bad symptom, and the gentleman left town in a fortnight."

In a vascular tumour removed recently in the hospital by Mr. Lawrence, which closely resembled, in its general characters, the vascular swelling just described, the author was interested in observing several of those hard concretions known by the name of phlebolithes. Phlebolithes, or vein-stones, are confined to the venous system, and their presence in such a tumour may be taken as very conclusive evidence as to the character of the vessels affected. It is the opinion of the best pathologists, that vein-stones form in consequence of a limited sub-inflammatory process, which determines a coagulation of the blood in distinct layers; the coagula, for the most part spherical in shape, continue for a length of time subject to an interchange of action and reaction with the passing current of venous blood, and there is deposited in them phosphate of lime and magnesia, until the whole clot is transformed into an earthy mass. They form, then, originally, not external to, but within the vein.

In connexion with these venous swellings, affecting the integument and the subjacent areolar structure, the author mentions a morbid degeneration of the veins of muscles. In a particular case, a large portion of the vastus externus muscle, below the broad tendon of the gluteus maximus, was converted into an irregular soft blueish-black mass; the muscular fibres, pale and wasted, being separated and pushed aside by tortuous and dilated veins. In the mass, which measured about four inches in length and two and a half in breadth, there was no increase, either in number or size, of the arterial ramifications, but the small veins, not capillaries, were enlarged to five or six times their natural diameter; the coats were thin, the tissues in which they ran loose and healthy. In further illustration of these points, the author mentions a case which he saw many years ago, the particulars of which are these:

"A little girl, the daughter of a physician, had a soft congenital swelling, with undefined edge, the size of half a walnut, over the right deltoid muscle. As it was increasing in size, it was examined by several surgeons, who concluded, from its situation, its softness, the

freedom from pain, and other symptoms, that it was a fatty tumour. Its removal being thought advisable, an incision was made through the integuments of the shoulder, in the belief that there would be brought into view a lump of soft fat, surrounded by a loose capsule; but the incision was continued down to the fibres of the muscle without displaying anything morbid, and it became obvious that the mass, whatever might be its nature, was situated deep under the deltoid muscle, in the vicinity of the shoulder-joint. Now, I scarcely need remark, that, as a general rule, the deeper seated a tumour the more unfavorable is its character; and the idea immediately suggested itself, that in the present instance it might prove a medullary growth, which would involve the loss of the whole upper extremity. The deltoid muscle was divided longitudinally, when a vascular mass was discovered imbedded in its substance; the bleeding was inconsiderable, and for the most part venous; and the morbid structure was readily removed. The case terminated perfectly well; and I understand that the patient, now full grown, has little or no scar left to commemorate the event."

In recapitulating the varieties of disease above mentioned, and which include all the varieties affecting the skin and subjacent soft parts, the author arranges them in the following order:

1. Aneurisma per anastomosem, which pulsates synchronous with the heart's beat; a true aneurism of the smaller arteries, involving all their coats and their entire circumference.
2. Nævus, affecting the capillaries either of the skin (cutaneous) or of the subjacent areolar tissue (subcutaneous), the common nævus of infants, which does not pulsate.
3. The venous swelling, which likewise does not pulsate, and which has been observed in the subjacent areolar tissue and in muscle.

[The author regrets that it is not in his power to describe from microscopical examination the condition of the walls of the dilated vessels. It would be highly interesting to ascertain whether there was any change in the elastic coat of the vessels, which would explain the reason of their yielding to the pressure of the current of blood.]

Art. 56.—*Peculiar Disease of the Nasal Fossa.*

By Dr. John Gardner.

(*Edinburgh Monthly Journal,* April 1850.)

The subject of this narrative was above 50 years of age, when he became affected with a common coryza of no unusual severity. While labouring under it, he was called to a piece of professional duty at a considerable distance. It was early in May, and he had to travel twelve miles of his journey in an open vehicle, and under a chilly atmosphere, —the last four miles being after sunset. His coryza was thus very sensibly increased, and it became still more troublesome after his return. A week after the date of his journey he was obliged to take to bed for four days, in consequence of feverishness, headache, and excessive coryza; which last symptom was then, for the first time, attended with a most distressing fetor. The fetor proceeded exclusively from the right nostril, from which also the discharge chiefly

came. The matter was thick and opaque. There was considerable pain in the right superior-maxillary region, and also behind the mastoid process, at a point about an inch below the insertion of the right trachelo-mastoid muscle. The discharge, which was at first excessive, gradually diminished, along with the other symptoms, and he was enabled to resume his professional duties in less than a week from the time he took to his bed.

Such was the commencement of a disorder, which hung about him, in a subdued form, for several years. After the subsidence of the acute symptoms, his ordinary condition was as follows:—He had,—1, a constant sense of partial obstruction of the right nostril, requiring some degree of force to impel air through it; 2, more than the usual amount of mucous discharge from that nostril; 3, inability to incline his head forward without causing a necessity for the use of his handkerchief; 4, fetor, not constant, nor even frequent, as it rarely occurred only once or twice a-day, and for a minute or thereabouts at a time; rarely perceptible by others; always accompanied, when it did occur, by a sensation of the escape of some fluid into the affected nostril; and usually followed by the discharge of a pellet of matter, which was thicker and yellower than the ordinary mucus of the nostril; 5, pain in the region of the right superior maxillary bone; it was a dull pain, not constant, but seldom absent for above a day, or two days at most; 6, to these things may be added, that the discharges from the two nostrils, microscopically examined, presented very different characters —that of the right nostril containing pus globules, while that of the left exhibited no characters at all different from those of the healthy secretion of the Schneiderian membrane. All these symptoms, and especially the fetor, were immediately and greatly increased by every inflammatory cold which affected the nasal fossa.

After the lapse of seven years and a half from the first invasion of this disagreeable disorder, he was lately seized with a catarrhal affection, accompanied by coryza, fetid discharge from the nostril, and some headache. The attack was in no respect different from many attacks which he had had at various periods for some years before it. But, immediately after its cessation, he remarked with satisfaction that the fetor was gone, and the habitual discharge from the right nostril greatly diminished. The sense of obstruction in the nostril, the stillicidium upon inclining the head forward, and the pain in the maxillary region, had all undergone a great change for the better. The change has been progressive,—and he is now so free from all these symptoms, that his cure may be regarded as nearly complete.

On a retrospect of this case, it appears probable that the exposure in which it originated had caused the death of a minute portion of bone within the nostril, possibly of a part of the spongy bone, and that the exfoliation of this portion was the cause of the cure. That its escape was not observed by the patient is not against this supposition; as a very inconsiderable fragment would suffice to account for everything.

In order to render this history complete, it may be stated that the patient is of a healthy constitution, that he has not been subject to glandular swellings, or any form of strumous disorder, that he never

took mercury except in the form of a purgative of calomel, and *that* not half a dozen times in his life, so far as he can remember; and that he never in his life had any description of venereal disorder.

Two things must be mentioned with regard to his family. One is, that his mother certainly suffered from some analogous affection some years before her death; she did not indeed complain of it, and therefore he cannot supply any minute information about it; but her handkerchief gave sufficient evidence of more than usual discharge from the nostrils, and of its being thick, and, as he thinks, somewhat fetid.

The other fact alluded to is of more interest. His brother, who is also of the medical profession, experienced a similar attack in his own person. In him the complaint did not supervene suddenly, but was the result of repeated and neglected colds. For forty years of his life he scarcely ever required the use of a pocket-handkerchief. For two years he used two every day; and, when dry, they were always glued together in the manner that is caused by a discharge from an excited mucous surface. The discharge was manifestly fetid at times, though not constantly. This was not felt by himself, for the sense of smelling was then, and still continues to be, much blunted. After two years, during which time the discharge had flowed pretty copiously, and at times so freely as to be a very great inconvenience, a gradual abatement was observed; and, about this period, he was aware of some traces of osseous matter. The right nostril was much more affected than the left, but his pain was confined to the region of the frontal sinuses, and was dull, not acute. He has still a constant moisture of the right nostril, which becomes copious, not with colds only, but with any disturbance of health, and has occasional fetor. He thinks the sense of smelling is returning. He still uses a handkerchief every day; but he remarks, that when it is dry, it is not now, as it formerly used to be, hard and stiff as a board. It is, therefore, evident that a great change has taken place, indicating a diminution of fibrinous exudation, and an approximation to a cure of his disease.

Under the title ozœna, in a variety of systematic works, will be found descriptions of a form of disease similar to the above, which are usually accompanied by an unfavorable opinion with regard to a chance of its removal. The prognostic, I have no doubt, is well founded in many instances. But I am inclined to think that where, as in the cases just related, there is neither cancer, nor struma, nor syphilis, nor mercurial erethism to contend with, the case will generally end in a cure. It is probable that such cases are seldom watched from beginning to end by those who have described them, and that they have therefore sometimes been erroneously judged incurable merely on account of their tediousness.

Dr. Simpson had met with cases somewhat similar, in which, after sneezing, the patients expelled casts of the nostril. He had not thought of diseased bone as the cause, but one of his patients had necrosis of the lower jaw.

ART. 57.—*On Arthropathia of the Shoulder-joint.* By M. VELPEAU.

(*British and Foreign Medico-Chirurgical Review*, Oct. 1849.)

M. Velpeau designates the affections of the joints under the general term arthropathia; and in the present paper, a peculiar form of disease affecting the shoulder-joint is illustrated by several examples. Every surgeon meets with cases which are characterised by atrophy of the muscles of the shoulder, especially the deltoid; and numerous autopsies have assured M. Velpeau that the osseous portions of the joint participate in the atrophy. The deltoid may be reduced to almost a membranous condition, scarcely exhibiting any muscular fibres; and not only is the glenoid cavity diminished in size and depth, but the head of the humerus is lessened, and even its body diminished in volume and length. The cartilages disappear early, not as in ordinary caries, but sometimes by a sort of atrophy, and at others by undergoing osseous transformation.

The disease may commence as ordinary arthritis, but is soon found to differ from this by the slowness of its progress (M. Velpeau has known cases occupy more than twelve years before complete), and the accompanying atrophy. The original part affected seems to be the soft parts, especially the deltoid; and the constancy with which this is the case has led M. Velpeau to conjecture, that an affection of the circumflex nerve might be the original one. There are three distinct stages: the period of painful affection of the brachial plexus, or only of the circumflex, which, with the accompanying swelling, has led to the disease being mistaken for rheumatism; the muscular atrophy; and the changes in the bones. In two of the cases cited there was observed a semi-luxation downwards, of easy temporary reduction. This luxation may be due to the elongation of the muscular fibres allowing the escape of the head. In treating these cases, three periods have to be observed. During the early and inflammatory period, repeated leechings, or, better still, small cuppings, friction with mercurial and belladonna ointment, and the application of emollient and resolvent cataplasms, are indicated. This period passed, large blisters, moxas, or the cautery before and behind the joints, baths, with local stimulants and tonic douches, either of plain, or sulphureous, or aromatic waters, are demanded. In the third stage, when the bony parts are affected, the derivative and antiphlogistic treatment is to be laid aside, and frictions, especially with the essential oil of turpentine, resorted to. They rouse the dormant vitality, and produce a cure in many cases apparently hopeless. The sagacity of the surgeon will decide between the two risks of causing anchylosis by leaving the arm too long unmoved, and the re-excitement of inflammation by moving it too soon. Of the two dangers, the first is the greatest; and in order to prevent it, we must not fear exciting a little pain. Cases are detailed in which even subluxation had been produced; and yet treatment has soon restored the plumpness and full use of the arm.

Art. 58.—*A Case of Gunshot Wound, and subsequent Extraction of a Bullet from the Bladder.* By E. Macpherson, Assistant-Surgeon in the 9th Royal Lancers.—A private in H. M. 24th Regiment was wounded (at the battle of Chillianwallah, on the 13th of January, 1849) in the left buttock. Severe pain was immediately felt in the testicle on the same side. The ball could not be found, but the wound healed without difficulty. No blood was ever noticed in the urine. Symptoms of disturbance of the bladder shortly afterwards set in, which not yielding to remedies, the bladder was examined, and a foreign body detected; and on the 30th of August, the lateral operation, as if for the removal of a calculus, was performed. An iron ball was extracted, which had become encrusted with a thin layer of sandy deposit. To the above case Mr. Dixon added notices, from various writers, of fifteen operations for the extraction of balls, which had either primarily entered the bladder, or having lodged in the immediate neighbourhood, had made their way into its cavity. Mr. Dixon had been favoured, by Mr. Cusack, of Dublin, with a notice of a similar operation performed by him, and another by the late Mr. Colles, neither of which has been published; in three cases extraction was not attempted, or was unsuccessfully tried, the bullets, forming nuclei of stones, having been found in the bladder after death; in one case the bullet was small enough to be voided by the urethra. The situation of the external wound, in the cases cited was very various. The time that elapsed between the infliction of the wound and the removal of the ball varied from a day or two to ten years. The lateral operation was performed in the majority of cases.

Dublin Medical Press, April 17, 1850.

Art. 59.—*Case of Rupture of the Calcanea-Scaphoid Ligament.* By Mr. Nunn.—A lad, æt 19, "slipped up" whilst carrying a considerable weight. Swelling, great pain, and inability to rest the body upon the foot, followed. Five weeks after the accident, the time when the case first came under the care of Mr. Nunn, the swelling had in some measure abated, but the foot could scarcely touch the ground without producing intense pain. The arch of the foot was very much flattened, and the styloid process of the scaphoid bone could be detected more easily than in the sound foot, in spite of the swelling and thickening of the tissues. During six weeks, complete rest, iodine paint, pressure by strapping, with camphorated mercurial ointment, hot fomentations, placing the foot on a higher level than the rest of the body, had each a trial given them, without producing at all an encouraging amount of improvement: the exquisite tenderness of the sole of the foot remained unrelieved. After the failure of these remedial measures, Mr. Nunn subjected the foot to a course of rubbing, or rather kneading, with the balls of the thumbs. This treatment, although at first accompanied with severe suffering, produced, after a few weeks, most satisfactory results. The effusion disappeared, the morbid sensibility almost ceased, and the part was ultimately restored to its proper office. Mr. Nunn said, that he considered the

great tenderness to have arisen from the effused lymph having imbedded the nerves in a solid medium, and that thereby any pressure, however slight, was immediately transmitted to them, instead of being warded off, as in a healthy condition of parts, by the highly elastic pad of fat and muscle by which the nerves were protected. Mr. Nunn's explanation of the success of the treatment was, "that by means of the strong friction and kneading the more deeply-seated vessels were stimulated to increased, and, at the same time, healthy action."

Medical Gazette, Dec. 14, 1849.

SECT. III.—NATURE AND TREATMENT OF SURGICAL DISEASES.

Art. 60.—*Statistics of the Mortality following the Operation of Tying the Femoral Artery.* By Dr. Norris.

(*American Journal of the Medical Sciences*, Oct. 1849.)

Dr. Norris, Surgeon to the Pennsylvania Hospital, has published some statistics of the mortality following the operation of tying the femoral artery. The tables are intended to show the dangers attendant upon the Hunterian operation, for what appears to be the most common form of external aneurism; a tabular statement is also appended of the cases treated by pressure. The result of 204 cases in which the femoral artery has been ligatured by the Hunterian method, shows a mortality of 50, and the recovery of 154; six of the patients who recovered, undergoing amputation in consequence of gangrene of the limb. Of the whole number of cases contained in the table, the artery was tied in 155 for the cure of popliteal aneurism; in 22, for femoral aneurisms; in 6, for aneurismal tumours of the leg; in 4, for pulsating tumours of the head of the tibia, or condyle of the femur; in 5, for varicose aneurisms; in 3, for rupture of the artery, accompanying fractures of the leg or thigh; in 8, in order to prevent or abate inflammation after wounds and dislocations, and to arrest hemorrhage, either primary or secondary; and in 1, for a supposed popliteal aneurism. Of the 188 cases in which the operation was done for the cure of aneurism, 142 were cured, and 46 died; 177 of these cases occurred in males, and 11 in females; and of 124 cases, 63 were on the right, and 61 on the left side. In 147 cases in which the ligature separated spontaneously, it came away in 91 before the 20th day; in 37 between the 20th and 30th days; in 14, between the 30th and 40th days; and in 5, beyond the 40th day.

A return of the pulsation in the aneurismal tumours, after the application of the ligature, was observed in 19 cases. In one of them the artery was ligatured on the 27th April, 1821. On the 20th of July, 1825, he was readmitted, and stated that the tumour had entirely disappeared soon after he was discharged in 1821; but that five or six weeks before his readmission, he observed that a swelling

had returned in the upper part of the ham, about the size of a hen's egg. It was proposed to take up the artery between the point tied in the former operation and the aneurismal sac; but the patient preferred amputation, and died eight hours after it. The femoral was found to be obliterated for the space of half an inch, at the part where the ligature had been applied four years before. Immediately below, two small trunks were observed to enter the continued trunk of that vessel. These were equal to half the diameter of the femoral vessel. The anastomosing branches given off above the obliterated portion were a good deal enlarged.

In other cases where the pulsation returned it spontaneously ceased; in some it was cured by compression and cold; and in some was explained by an abnormal distribution of the arteries.

"*Hemorrhage*" occurred after the operation in 24 cases, of which 12 died, and 12 were cured. The treatment adopted in those which recovered, appears to have been compression, amputation, and the application of a second ligature.

"*Suppuration of the Sac*," occurred in 16 cases after the operation for aneurism: of these, 6 died and 10 recovered. In the successful cases, the recovery was effected by incisions and amputation.

"*Gangrene of the Limb*" followed in 31 out of the 204 cases contained in the tables; and in no case occurred except where the operation was done for aneurisms. In one case the gangrene was stated to have been caused by the employment of fomentations of hot salt, notwithstanding strict injunctions to the contrary. One patient had aneurismal tumours in both hams; the left artery was first tied, and gangrene of the foot followed it. The ligature on the right limb was done at the request of the patient; gangrene occurred in it also, and death followed. In those cases which were treated by amputation, some recovered and some died from mortification of the stump.

In four of the cases included in the tables, "*mistakes in diagnosis*" occurred. In one the precise nature of the tumour could not be ascertained, and it was punctured before the operation. In another case it was mistaken for an abscess, and opened a week previous to the operation; after bleeding three pints, it ceased spontaneously. In a third the tumour was of the size of a goose's egg, distinctly pulsated, and was said to have shown itself suddenly while walking, three weeks previously. Compression was at first attempted, and afterwards the artery was tied, nothwithstanding which the swelling continued to increase. On post-mortem examination, it was found to consist partly of a fibrous tumour, divided into lobes, and, in part, of a soft substance containing cells filled with a serous fluid. The artery ran over the tumour between two of the sacs, and through these its pulsations had been so communicated as to give the sensation of the whole tumour pulsating. In the fourth case an incision was made for the evacuation of matter, supposed to be deeply seated; nothing but blood and serum escaped. The integuments in the popliteal region afterwards ulcerated; profuse hemorrhage subsequently occurred, and the artery was tied.

The following appear to have been the "*difficulties of, and accidents during, the operation.*" In 11 of the 204 ligations of the

femoral artery, the crural vein was either included in the ligature or wounded in the operation. In 2 cases, the vein as well as the artery was tied. In 5, the vein was wounded in the operations. In 1, the ligature was found to have passed through the vein; in another, profuse hemorrhage occurred on opening the sheaths of the vessels, and in another the vein was pricked in the operation, and a small portion of it included in the ligature along with the artery.

In 9 cases, the artery was ligatured for popliteal aneurisms on both sides; and in 4 cases, for the cure of *pulsating tumour of the head of the tibia, or condyle of the femur.* The latter four all recovered; but in two of them, there were afterwards returns of the disease.

But little success seems to have attended the operation, when adopted for the cure of *Varicose Aneurism* of the lower limb. Five cases are recorded; four of these proved fatal, and in one no benefit was received from the operation.

Dr. Norris has appended a summary of the reported cases of femoral and popliteal aneurisms which have been treated by pressure, since 1842, taken from a tract by Dr. Bellingham on Aneurisms; and the Report on Surgery contained in the first volume of the 'Transactions of the American Medical Association.' Thirty-seven cases are reported, nearly all of popliteal aneurism. The duration of compression varied from two to four days, and only two deaths are recorded; the rest were all cured.

Art. 61.—*Ligature of the Common Carotid Artery.*

By John P. Mettauer, m.d. ll.d.

(*American Journal of the Medical Sciences,* Oct. 1849.)

[The object of this paper is to lay before the profession a few observations respecting the cerebral disturbances occasioned by this operation, deduced from two unsuccessful cases which occurred to the writer.]

Case 1.—The subject of this case was a man, æt. 43 years, who had anastomosing aneurism of the antrum and nasal cavities of many years' continuance, which had subjected him to frequent and exhausting hemorrhages, and had produced great debility, and a state of complete anæmia. The anæmia was such, that the blood discharged from the tumours the day preceding the operation would barely stain a white cloth. The patient, moreover, suffered from all the concomitant symptoms attendant upon an aggravated anæmic condition. In the performance of the operation, the region below the omohyoid muscle was selected, and the ligation of the artery effected without a single untoward occurrence. "When the ligature was first drawn firmly on the artery, it seemed to produce a shudder through the whole frame; but it was transitory, and the patient expressed himself as being quite comfortable in a few moments after. He was placed in bed, with the head somewhat elevated, and the neck entirely at ease. In this condition he slept a few moments; but was aroused from his slumbers by a convulsive start of most of the muscles of the

right side, the left carotid being the seat of the operation; the patient had a wild expression of countenance, and great restlessness. The pulse, too, was considerably agitated."

Enemas of salt and water, with calomel, scammony, and other cathartics, were administered, with the idea of relieving the symptoms by a revulsion to the bowels. "Before the twenty-four hours had expired, it was discovered that the right side was nearly paralysed; and when the limbs of that side were moved, the motion was convulsive. The man was now entirely delirious; incessantly moaning; his voice had become hoarse and squeaking, like the bleating of a goat; there was great restlessness; the thirst was unquenchable; retention of urine; and very considerable heat of skin, and reaction of the pulse." On the third day, fourteen ounces of blood were detracted, which was well sustained, not being followed by any perceptible benefit. Saline purgatives were abundantly and repeatedly used, and proving ineffectual, castor and croton oil were next had recourse to, injections being at the same time employed. The bowels, however, continued obstinately constipated. On the seventh day, half-grain doses of tartar emetic were given every two hours, in watery solution, with hot fomentations to the hypogastrium, which had become tympanitic. Blisters to the thighs and ancles were also used. "On the first day the delirium had become coma; the paralysis was complete, the bowels still unmoved; the pupils were greatly disordered, the left being unequally dilated, while the right was greatly dilated; the breathing was stertorous and laboured; there was singultus; the extremities, nay, the surface generally, were cool; the position was constantly dorsal, and the prostration was extremely great. The wound was frequently examined, and uniformly presented a most favorable condition."

On the 12th day after the operation he expired in universal convulsions, the convulsions being more violent on the left than on the right side of the body.

Post-mortem 18 *hours after death.*—After examining the abdomen and thorax, and nothing very unusual being detected, the encephalic contents were examined. The meninges of the left hemisphere (the left carotid was the one tied) exhibited no marks of inflammation.

"Upon removing the dura mater, or rather after laying it open longitudinally, the hemisphere did not present the least vascular turgescence; its convolutions were subsiding and shrunken, and the hemisphere imparted the sensation of fluctuation when pressed on opposite sides by the fingers. The scalpel was plunged into it, and there was a gush of a thick semi-fluid, about the colour and consistence of thickened milk. The opening was enlarged, and it was discovered that the entire hemisphere was in this state of ramollissement. Upon opening the dura mater of the right hemisphere, the convolutions of the brain were found turgid and plump, but presented no marks of previous inflammation. It was exceedingly pale, not only on its surface, but also throughout its interior. Its density, perhaps, was about normal. The left portion of the cerebellum was morbidly softened, while the right was nearly normal as to density, but pale.

No more serosity was met with in any part of the brain than usual, especially on the right side.

Case II.—The subject of this case was a healthy robust man, about 25 years of age, affected with false aneurism, resulting from a puncture of the right internal carotid just above the bifurcation. This man, also, was greatly enfeebled by repeated hemorrhages, and in a very anæmic condition. Six weeks had elapsed from the time the wound was inflicted.

The operation was performed on the 8th of March, 1842, and the region below the musculus omohyoidus was selected, as in the preceding case. The common carotid artery was successfully and without difficulty secured. The whole operation occupied, probably, ten or fifteen minutes' time, and not more than half an ounce of blood was lost. When the ligature was tightened upon the carotid, the man experienced a shudder, and became sick and faint, from which, however, he was soon recovered by ammonia, &c.

At twelve o'clock at night, about eleven hours after the operation was performed, he was seized with a rigor that continued with greater or less degree of intensity until nearly seven the next morning. During this state, the mind was greatly alienated, and in the use of the means for warming him it was discovered that the left arm and leg were paralysed.

On the second day, reaction was very considerable, and attended with an exceedingly rapid, convulsive, and unsteady pulse. The delirium was intense; the thirst tormenting in the highest degree; great restlessness, headache, and an exceedingly hot skin. Venesection to fourteen ounces, and an active cathartic enema of strong salt-water were ordered, together with internal and external refrigeration.

12 m.—The bleeding was well sustained; the injections acted with moderate freedom, but not until three had been administered. The reaction and external heat were somewhat moderated, but the delirium and paralysis were not the least affected. Half a grain of tart. antimon. et potass., in watery solution, were now given every second hour, with an enema of salt-water every hour, and cold rice-gruel in small quantities, and at long intervals, as nourishment.

6 p. m.—Symptoms the same. A dose of calomel, ant. acid. nit. of pot. was ordered to be administered every fourth hour until free catharsis followed, and rubefacients to be employed to the paralysed extremities. Blood was to be detracted at midnight to what extent the pulse would bear.

Third day, 7 a. m.—Rested badly. Delirium profound; paralysis no better; pulse much enfeebled; skin very hot and dry; thirst intense. The wound was examined and found to be doing well. During the day, epispastics were ordered to the legs, ankles, epigastrium, and thighs. The calomel continued every five hours.

Fourth day, 7 a. m.—Rested badly, delirium and paralysis the same. Bowels open, but the evacuation highly vitiated; retention of urine for the first time; debility increasing; breathing rather laborious; coolness of extremities increasing; thirst unabated; position dorsal; occasional singultus and tendency to coma. The same treatment to be continued.

Fifth day.—Symptoms decidedly deteriorated; delirium comatose; paralysis about the same; breathing quite laborious, &c. The patient died on the twelfth day after the operation.

Post-mortem 24 hours after Death.—Abdomen.—With the exception of unusual paleness the organs of the cavity presented no unusual appearance.

Thorax.—The organs of this cavity were also free from the marks of disease, and were normal with the exception of their peculiar paleness. The bags of the pleura perhaps contained more serosity than is usually met with; six ounces were obtained from them in the aggregate. The heart, pulmonary artery, and aorta contained coagula of pale-yellow matter, without a trace of red globules, and were exceedingly pale.

Head.—Upon removing the skull-cap, the dura-mater appeared exceedingly pale, and the right hemisphere, when pressed on with the fingers on opposite sides, imparted the sensation of fluctuation. When laid open longitudinally, so as to expose the convolutions of the hemispheres, those on the right side were soft, yielding, and somewhat shrunken. Cutting into it, a yellowish-white semifluid was discharged, almost identical in colour and consistence with that of the first case; and the entire hemisphere was thus disorganized. The left were very slightly changed in any respect from their normal state, with the exception of being unusually pale and bloodless. The right portion of the cerebellum was also found disorganized and completely softened, while the left was, as the corresponding hemisphere of the brain, nearly normal, except its peculiar paleness.

Dr. Mettauer has added, in his paper, the following brief and interesting remarks, which we give at full length and in his own words.

By referring to the post-mortem condition of the hemispheres of the brain on the sides of the operations, a clue is furnished by which to account for the unfortunate termination of the cases in question; and when taken in connexion with the favorable state of the parts involved in the wounds, there cannot be a doubt that death resulted exclusively from disorganization of the hemispheres of the brain. In both cases the wounds had nearly healed by the first intention; and there was neither inflammation nor pus in any part of them beyond what might naturally be expected under the most favorable circumstances of such wounds. The arteries, too, had become nearly obliterated, and were sound and healthy both below and above the ligature. An organized clot of feeble cohesion, however, plugged up each carotid below the ligature; and the trunk was very nearly severed by the ligature. The walls of the wounds were very slightly thickened, and seemed healthy, except unusually pale. Indeed this yellowish-pale aspect seemed to pervade every structure, nay, it even extended to the blood, and was, doubtless, due to anæmia, brought on by the profuse hemorrhages, often repeated, anterior to the operations. But will this anæmial condition enable us to account for the ramollissement of the brain? I think it will, as anæmia is always connected with reduction of vital force; and to the extent, in some instances, of barely sustaining the organic and vital actions of the economy. My

object in this paper is merely to suggest the idea that the depressed condition of the energies generally, but especially of the brain, unfitted it eminently for the struggle in accommodating itself to the new vascular relations imposed on it, by cutting off the direct supply of blood through the main trunk of the carotid artery by the ligature; and the ramollissement followed, as mortification would do in an extremity, if operated on for aneurism under like circumstances in all probability. It has occurred to me, during my many retrospects of these unfortunate cases, and I own that they have been numerous and intensely interesting, that possibly the usual anastomosis of the internal carotid and vertebral might not have existed, and when the circulation was intercepted by ligating the main trunk of the carotid, the corresponding hemisphere was left entirely without blood. This thought did not present itself until long after the cases had ended, or I would certainly have tested its feasibility by injecting the arteries of the brain. In either case, the fact that grave cerebral disturbances often follow ligature of the carotid, points out the necessity of investigating their causes carefully, as well as expedients designed to ward them off or to correct them. I think in all cases it would be safest and best not to intercept and cut off at once and completely the supply of blood by the carotid in cases demanding its ligation; but to reduce the supply gradually, as the brain seems to bear it. This can easily be done, and it will enable the brain gradually to adapt itself to such changes as may be imposed on it by the operation. Should unpleasant effects follow, the full stream of the carotid might be restored, or such a portion as might be sufficient to support the exercises of the corresponding hemisphere. If no unpleasant effect follow, the supply may be gradually reduced, until, finally, it is cut off completely. And to accomplish these ends, I would suggest that a delicate double canula be invariably employed in the operation. If formed delicately it will occupy no more space than the ligature, should the free ends be allowed to remain; and its presence in the wound would not prove irritating to any dangerous extent, if at all. The only possible objection of any weight that could be urged against it is that it might, to some inconsiderable extent, prevent union by the first intention. This, however, would be a small matter when compared with the safety it would secure; but it is questionable if its presence in the wound could retard the cure in the slightest degree, as these wounds seldom, if ever, heal by the first intention. After unlooping the carotid with the ligature, its free ends may be passed through the barrels of the canula, and one of them secured by one of the ears. The other extremity being carefully tightened, the canula may be slid down upon the artery, where it can be confined by fastening the ligature to the remaining ear of the canula. Through the agency of this simple and handy contrivance, any degree of force may be communicated, either to cut off the supply entirely, or only partially; and should the hemisphere seem like suffering, or dangerous symptoms supervene, and it be deemed necessary to disembarrass the carotid entirely, the ligature and canula may both be removed at once, and without giving the least pain to the patient, or without reopening the wound. Another mode of obliterating the carotid, as well as other

arteries in a gradual manner, may be effected by transfixing the vessel with delicate pins or needles, so as to destroy the arterial tissue of the part, and cause its gradual contraction and final obliteration. This expedient I have employed, but not with the larger order of arteries, and think well of it. If the tranfixing is effectually done, entirely around the artery, for eight or ten lines in extent, it will seldom fail to cause the obliteration of arteries of moderate caliber; and the larger order, I should suppose, would be equally liable to its obliterating effects if the agency is effectually used.

ART. 62.—*Observations on the Treatment of Nævi Materni; with Cases of Removal of these Growths from different parts of the Face, without Deformity.* By J. B. CURLING, Esq.

(*Medical Gazette*, Jan. 25, 1850.)

Congenital nævi present so many varieties, depending partly on structure and partly on situation, that the remedies employed for their removal are necessarily numerous. When these growths are developed in different parts of the face, the difficulty of removing them is often much increased, for the importance of preventing disfigurement of the countenance prevents the surgeon attacking them in ways which, though effectual, necessarily involves the destruction of the parts affected.

The treatment applicable to nævus must be adapted to its form, according as the growth is cutaneous, or the bright-scarlet kind; subcutaneous, or a livid puffy swelling; or mixed, partaking of the characters of the cutaneous and subcutaneous.

In the cutaneous nævus, if the growth be small, and not very prominent, the best mode of getting rid of it is by the application of a powerful escharotic, as the strong nitric acid. If the nævus be of some size, and project, and particularly if it be situated in a part where the areolar tissue is abundant, and the skin yielding, as the neck or labium, the most effectual plan is to strangulate the growth, either singly, or in two, four, or more parts, according to the extent and form of the growth; although a scar is thus produced, after the lapse of a few months it becomes imperceptible. In cases where the nævus is not adapted for tying, it may be extirpated by subcutaneous cauterization. A small knife is to be introduced through the sound skin, at the side of the tumour, and being passed into its middle, is to be moved about so as to lacerate the morbid tissue in all directions. A fine-pointed probe, coated with the nitrate of silver, is then to be inserted at the small wound, and freely applied to the lacerated part. The application effectually stops the bleeding, and produces inflammation, which leads to obliteration of the nævus. It sometimes causes ulceration, or a small slough of the part, which more certainly secures the removal of the morbid tissue.

The treatment of subcutaneous nævus must be conducted somewhat differently. It can often be got rid of without destruction of the skin, and consequently without any deformity. The principle upon which this is effected is the excitement of inflammation in the reticular

tissue, and its consolidation or obliteration by the effusion of lymph. With this object, the plan of passing numerous setons through the tumour has several advantages. It can be used in all cases and all situations; its effects can be regulated by the period during which the threads are retained, as well as by moistening them with stimulating liquids. It produces no scar, causes but little suffering, and is a pretty effectual remedy.

The mixed is a common form of nævus, and most difficult to treat. The subcutaneous portion may be obliterated by the passage of setons, after which the cutaneous will require to be destroyed by escharotics; but as this process involves a destruction of skin, and the formation of a scar, the author generally prefers, if the tumour be not of considerable size, at once to have recourse to the ligature as the most certain and effectual treatment.

The paper concludes with cases illustrative of the different forms of nævi already described, and the treatment already recommended.

ART. 63.—*Removal of a Tumour imbedded in the Parotid Gland.* By Mr. CANTON.—A man, æt. 60, had for several years been afflicted with amaurosis of both eyes, for which mercury, strychnine, galvanism, and other remedies had been ineffectually employed. Some time since he complained of a swelling below the left ear, and which had gradually increased in size. It gave no pain; but by degrees the resulting inconveniences were difficulty in mastication, deglutition, and great impairment of hearing. The tumour was firmly wedged in between the ramus of the jaw and the mastoid process, extending chiefly towards the angle of the former. The skin over it was healthy and unadherent, and to the touch it was firm and resisting.

Operation.—The superficial incision was commenced at the zygoma, extended thence, in a curved direction, along the anterior boundary of the tumour, and terminated a little way behind the angle of the jaw. The flap being dissected backwards, the tumour was seized by a double hook; and as traction was therewith made upon it, the knife isolated it from its connexions. A portion of the surrounding parotid gland required to be likwise removed. The depth to which the tumour extended was greater than the extent of its growth superficially; and on removal, it was seen to be an enlarged and apparently fungoid state of a lymphatic gland, inclosed in a strong, fibrous-looking capsule. The hemorrhage was trivial, and the patient recovered without any paralysis of the face, and with restoration of the power of mastication, deglutition, and hearing.

Medical Gazette, Nov. 20, 1849.

ART. 64.—*Intestinal Obstruction—Successful Operation of Opening the descending Colon.* By Messrs. FRED. FIELD and JOSIAH CLARKSON.

(*Medical Gazette*, Jan. 8, 1850.)

[The following two cases exhibit the conditions thought to call for Amussat's operation, and exhibit the difficulties attending it:]

Mr. Field's Case.—On May 3d, 1846, the author was requested to see J. R., a coach-axle forger, æt. 35, corpulent and muscular, and accustomed to drink largely of beer. He had always enjoyed good health until a year back, when he began to suffer from pain in the bowels, constipation, and tenesmus, his stools becoming scanty, and voided with difficulty; there was also some derangement of the functions of the stomach. Three months since, all these symptoms became aggravated, and were relieved only temporarily by purgatives. He often vomited after his food; his stools were voided with more difficulty, being of a more fluid consistence, though he had not noticed any diminution in their diameter. Four days before the author's visit, the bowels had ceased to act, and all the symptoms became greatly aggravated. When seen, the abdomen was greatly distended and tympanitic; there were pain, tenderness, and some bulging over the transverse colon: the pain was paroxysmal, and accompanied by strong tenesmus; vomiting was almost incessant. Calomel, gr. v, opium, gr. ij, were ordered, to be followed by a black draught every four hours. On the following day (May 4th) the symptoms continued unabated; the urine was scanty and high-coloured. Prussic acid and castor-oil were administered at distinct intervals, and the calomel and opium continued. Some relief to the pain and vomiting was thus procured. In the evening a purgative enema and warm bath were ordered; the injection was immediately returned, and not more than a pint could be thrown up. On the 5th of May the colon-tube was passed up, but could not be introduced more than eight inches. Twelve ounces of blood were taken from the arm. Larger doses of calomel and opium, croton oil, the cold douche, were successively tried, but without any relief from the bowels, or other than a temporary relief to the more urgent symptoms: galvanism was equally ineffective: still the patient's strength and spirits were sustained until the 15th, when they began to fail, and his countenance, tongue, and pulse betrayed a marked change for the worse: the matter ejected by vomiting had assumed a feculent colour and smell. It was then determined that an operation was the only resource left, and this was accordingly performed. As the patient lay on his back or belly, no indication was observable of the seat of obstruction, for the abdomen was equally swollen on both sides, and no bulging was perceptible in either lumbar region, though percussion elicited a duller sound on the left than right side. The patient was extended on a bed, with his face downwards, and a transverse incision was made in the left loin, commencing about two inches from the spine, and carried directly outwards for five inches and a half, about one finger's breadth above the crest of the ilium. The skin, fat, latissimus dorsi muscle, and quadratus lumborum, were successively divided, and a shining membrane exposed. This last, which was mistaken for intestine, proved to be fascia, and when divided a large quantity of fat was brought into view, which was carefully cleared away, and the intestine at length exposed at a considerable depth. Sutures were passed through it to retain it in its position, and subsequently to affix it to the edges of the wound, and an incision was then made into it to the extent of half an inch, which immediately gave exit to an immense quantity of light-coloured fluid fæces.

Vomiting entirely ceased, and the patient was relieved of all his urgent symptoms. The opening in the bowel being fixed by sutures to the skin, a large bread poultice was placed over the wound, and the patient was enjoined to lie on his left side. Through the following night the evacuations continued abundant; the belly became soft and free from tenderness, and the general symptoms were still further relieved. On May 17th the sutures had ulcerated from the intestine, which was adherent all around to the circumference of the wound. On the 18th, the wound was rather inactive; it was syringed with yeast mixed with warm water, and dressed with lint dipped in oil, the surrounding skin being smeared with cerate. Granulations subsequently sprang up; and with occasional variations and trifling drawbacks he proceeded favorably, and his health became ultimately entirely re-established, and he was able to follow his former calling, which required great physical exertion. The only interruption to perfect health resulted from occasional constipation, caused, apparently, in a measure, by tendency to contraction of the artificial anus, which was remedied by the introduction of a bone clyster-pipe, and the injection of warm water. Thus, the passage was dilated, and the fæces were at the same time softened. This state of things continued until the latter part of 1847, when the patient was attacked with symptoms of hepatic disease; he lost his appetite, and became emaciated and ascitic, and ultimately died in February 1848, one year and nine months from the time of the operation.

On examination of the body, the peritoneum was found covered with lymph, the liver granular and thickened, and the kidneys congested. The stricture of the intestine was found to be in the sigmoid flexure of the colon, and was about four inches in length, this portion being filled by a plug of coagulated lymph. This plug became broken up and detached by maceration in spirit, leaving the intestinal tube continuous, though contracted and slightly thickened. The plug resembled the deposit which takes place in the larynx in acute laryngitis. The artificial opening was funnel-shaped, with its apex externally; the outer orifice was contracted to the size of a small goose-quill; it appeared to be lined by mucous membrane. The lower portion of the intestine was much contracted.

Mr. Clarkson's Case.—B. F., æt. 21, a robust and healthy-looking woman, applied to the author in July, 1846, with symptoms of dyspepsia, the bowels not having been relieved during the preceding five days. She was ordered an aperient pill and draught. Two days afterwards she returned, the symptoms being still unrelieved, and bowels still constipated. A stronger aperient was administered, but still without relief. On the 22d (the bowels not having acted since the 14th) she complained of pain in the umbilical and left hypochondriac regions; the abdomen was slightly distended and tympanitic, and pressure upon its parieties increased the pain. Constant nausea, but no vomiting; pulse 110; urine copious. To take croton-oil, half a drop every second hour. On passing the colon tube, it could not be introduced further than six inches. Two pints of fluid were injected, and returned untinged by fæcal matter. The abdomen became more distended and tender; flatus moved about the bowels, and ap-

peared to be arrested in the left iliac fossa. Leeches were twice applied, and some of Battley's solution of opium given; vomiting had commenced. Subsequently the following expedients were tried, but in vain, to induce the bowels to act; large doses of opium, the cold dash, free injection of water into the rectum, and its retention by pressure, galvanism; and, on the 26th, the symptoms becoming more urgent, an operation was undertaken, Mr. Hodgson concurring in the propriety of the step, and urging its immediate performance. The patient was laid on her belly, a pillow being placed under the abdomen, so as to raise it. An incision, five inches in length, was carried outwards from the edge of the erector spinæ muscle, about two fingers' breadth above the crest of the ileum. The quadratus lumborum and fascia were exposed and divided; and, after some loose fat was removed, the intestine was reached. Four ligatures were passed through it and fastened, two to the upper and two to the lower edge of the wound, and the bowels then divided longitudinally between them. A large quantity of fluid fæces at once escaped. The patient, who expressed herself relieved, was placed on her left side in bed. The discharge continued very profuse, and a poultice was shortly after applied. On the following day the symptoms were further relieved, and the distension of the belly had subsided, the escape of feculent matter being abundant. From this time she steadily improved, and was able, after a time, to return to her usual household duties. Whenever the bowels became confined, aperient medicine and an injection relieved her; but a tendency to contraction of the bowel gradually exhibited itself, which was for a time relieved by the use of bougies. This annoyance increased, and her health began to suffer seriously after the expiration of ten months. The patient's appetite failed, digestion was impaired, and she suffered from more constant and severe pain. The artificial anus was further dilated with sponge tents, and subsequently with the scalpel, but the constipation and other symptoms were not relieved, and she vomited nearly all she took into the stomach. She died in September, 1847, having survived the operation nearly fourteen months.

On examination of the body, the parietal peritoneum was found mottled, tubercular, and thickened; the opposed surfaces of the intestine were glued together, and to the liver, spleen, and stomach. These adhesions were very firm, and sufficient to have greatly interfered with the peristaltic action of the bowels. The small intestines were distended with fæces, but the transverse and descending colon were empty; the mucous membrane was ulcerated at several points. The obstruction was found to be about six inches from the anus, and on a level with the fundus of the uterus. It consisted of dense cartilaginous substance, surrounding the intestine, and completely obliterating the canal. It appeared to have originated externally, and pushed forward the fundus of the uterus, to which it adhered firmly. On section, the canal was found to be completely obliterated to the extent of half an inch; the edges of the artificial opening were rounded and smooth, and the neighbouring mucous membrane was healthy.

Art. 65.—*Traumatic Tetanus.—Cure.* By Dr. Stimer.

(*Philadelphia Medical Examiner.*)

Corporal Wolf, of Comp. F., 2d Regiment U. S. Dragoons, a native of Germany, of strong constitution and bilious temperament, aged 25, reported sick on the 1st of January. He complained of stiffness about the muscles of the throat and jaws, difficulty in swallowing, and an uneasy sensation about the scrobiculus cordis. He stated that several days previous he had stepped on a thorn, which gave him so little uneasiness that he did not deem it necessary to report the accident. Upon examining the puncture near the base of the great toe, no evidences of inflammation were detected. The pulse being strong and full, he was bled to the amount of sixteen ounces, and $\frac{1}{4}$ grain of the sulph. morph. given. At 3 p.m. he took v. gtts. of the oleum tiglii, after which $\frac{1}{4}$ grain of morphia was administered every three hours during the night. On the morning of the 2d he was much worse. The jaws were firmly closed, the muscles of the back of the neck hard and contracted, and he was unable to assume a sitting posture. The actual cautery was applied along the course of the spine, from the occiput to the sacrum, and dressed the surface, at 11 a.m. with strips of lint, saturated with the tincture opii; viii. gtts. more of the oleum tiglii was given, as that given him the night previous had not yet operated. At 3 p.m. he was evidently much better, his bowels had been freely moved, and the distressing symptoms of rigidity about the jaws and neck considerably ameliorated. The tincture of opium was applied to the spine until the 9th of January, when all the symptoms having disappeared, further treatment was dispensed with.

Art. 66.—*Case of Excision of the Head of the Femur.* By Charles Cotton, f.r.c.s., Surgeon to the Lynn Hospital.

(*Medical Gazette*, Dec. 31, 1849.)

Jessie Bullen, æt. 12, admitted into the hospital Sept. 10, 1849, with hopeless disease of the right hip, said to have commenced nine months ago. She is a pale delicate child, of scrofulous habit, with dark hair, bright blue eyes, long-curved eyelashes, and cheeks flushed of a vivid red colour. She lies on her back turned to the left side. The limbs are drawn up and contracted, and there is observed a large open sore over the right hip, which discharges thin curdy purulent matter. The least movement causes agonising pain. Both ankles are excoriated and ulcerated, and there is a painful bed-sore under the ribs, near the spine, on the left side. The circulation is hurried, the appetite capricious, and the stomach ticklish; but there is almost an entire freedom from cough.—Ordered to have cod-liver oil, judiciously administered, and any agreeable nutritious diet. Apply linseed poultice twice a day over the hip.

Sept. 28th.—Improved in appearance, and has gained flesh. The oil has been taken regularly, excepting an occasional discontinuance owing to the stomach being deranged.

Oct. 6th.—Renewed hectic excitement and exhaustion, loss of appetite, partial sweating, pain, and restlessness. The pitiable condition of the patient now led to a more searching examination. A large circular sore over the right hip disclosed the great trochanter, covered with florid granulations, prominently protruding; and on passing the finger through the posterior part of the opening, the head of the femur was easily reached, and found dislocated on the ilium, lying in the centre of a large abscess. The limb was drawn up and shortened, the knee rigidly flexed and immovable, and fixed a little above and on the inner side of the opposite knee, which was also stiffly contracted, and drawn upwards and outwards. As it was evident the patient must sink unless some operative proceeding were resorted to, and as chloroform inhalation promised to disarm of importance any objection on the ground of pain and tediousness of the operation, the opinion of the medical staff was requested upon the propriety of attempting the relief of the poor girl by resection of the head of the bone.

10th.—Operation sanctioned in consultation, there existing no positive indications of organic mischief, or of the disease extending beyond the upper part of the femur.

12th.—The patient having been previously rendered unconscious by the administration of chloroform, was brought into the operating room; an incision was made through the hypertrophied and ulcerated tissues, about five inches in length, commencing above the head of the bone, and terminating below the protruding trochanter: this was afterwards slightly prolonged, to facilitate the sawing of the bone, the soft parts were then cautiously dissected away and separated, and the head of the femur made to project through the wound, by forcibly twisting the limb inwards. The portion of bone to be removed was then grasped firmly in the operator's left hand, and a section made by a common saw, carried in an *oblique* direction, through the great trochanter and neck of the femur. The bevelled end of the bone being in a diseased condition, the saw was again immediately applied, and a slice about a third of an inch in thickness removed, the section terminating just above the lesser trochanter. The joint cavity, on examination, was found filled up with a mass of soft granulating deposit. An ineffectual attempt, owing to the friable state of the tissues, was made to secure one vessel, which at first spouted out briskly; but no hemorrhage of importance occurred. On the removal of the patient to bed, the limb, now set free at the hip, was brought into as good a position as the contracted knee would admit, and steadied by means of a long splint on the outside. The operation was quickly completed without difficulty; tenotomy of the hamstring tendons was left for a future consideration, should the case do well. The chloroform inhalation answered admirably; some hysterical sobbing followed its withdrawal, and the girl complained much of pain in the right knee. Ordered

Liq. Opii Sedativ. (Battlei) ℥xv. ex syrup. statim.
Milk and toast-water diet.

13th.—Became quiet and composed towards the evening; was restless during the night, and a slight hemorrhage took place from the wound. Has dozed much this morning, but still complains of pain at the knee,

and of being cramped at the ankle; this was relieved on loosening the bandage, a slight sanguineous oozing continuing. The wound was dressed with lint, moistened with infusion of matico, and the following draught prescribed to meet irritative feverishness:—

℞ Liq. Ammon. Acet. ʒ j;
Tr. Hyoscyami, ♏x;
Vin. Ipecac. ♏v;
Syr. Papav. ℥ss;
Aquæ, ʒx.
Fiat haust. 3tia vel 4ta qq. hor. s.

14th.—A good night; pulse more calm; limb easy.

15th.—Another good night; no uneasiness of the limb. She is rather feverish and thirsty. Pulse 120. Allow a little chicken and half a pint of porter.

16th and 17th.—Had rested well; tongue clean; symptomatic fever subsiding; the wound discharging freely offensive pus. To be dressed with chloride of lime solution. Discontinue the mixture.

18th.—Though composed and free from pain, there is slight fever and peakiness; and a disposition to diarrhœa has required a dose of astringent mixture. The thigh appears shortened, and the end of the femur may be seen projecting within the wound, owing to the unavoidably cocked-up and contracted condition of the knee. The complete influence of chloroform having been induced, the patient was removed to an adjoining bed and placed upon a sheet of gutta percha web. Mr. Cotton then, grasping the thigh with the left hand and the leg with the right, gradually but forcibly straightened the limb, by tearing through the adhesions at the knee. During the extension the integuments of the ham were torn across, and the lacerated edges drawn a finger's breadth apart, (sub-cutaneous section of the tendons was dispensed with, as it was evident that the whole of the tissues, from long faulty position, contributed in keeping up the contracted state of the knee.) A straight Liston splint, reaching from the axilla to beyond the foot, and previously shaped to admit of easy access to the hip, was now applied, and secured by a bandage to the limb, and further steadied by a wide web belt carried round the body. All this was accomplished with but little apparent discomfort to the patient, who only whiningly complained of the knee on recovering from the effects of the chloroform. Water dressing. A well was formed to receive the discharge by placing a heavy weight on the outside of the splint near to the wound.

19th.—Easy and comfortable, and pleased with the straightness of the limb; hopes in time to overcome the contraction of the other knee herself. The head of the femur is well imbedded in the soft parts, and cannot now be seen in the wound.

20th.—Listless and sleepy. Has taken neither breakfast nor dinner to-day; was tempted to eat some port-wine and cake. The exhaustion seems attributable to the state of the bowels, which have been purged several times. If possible engage her attention by conversation or other means; let her have fish, game, or poultry, and wine or porter,

according to her fancy, and give an ounce of the following mixture three times a day :—

℞ Ext. Hæmatoxyli, ʒiss ;
Syr. Aurantii, ʒvj ;
Acid. Nitr. Dilut. ʒiss :
Decoct. Cinchonæ Aquæ puræ, āā. ℥vj. Ft. mistura.

22d.—Tongue moist and clean ; pulse less frequent ; bowels acted but twice yesterday. Has relished her partridge, and taken some porter to-day. Sleeps well at night, though disturbed occasionally with pain in the course of the crural nerve. Apply frequently a warm chamomile fomentation to the groin, which is slightly swollen and tender. Take the mixture but once daily.

26th.—In every respect improved. The wound looks well, and discharges copiously tolerably healthy pus. Has discontinued the mixture, as it disagreed. Take a pint of porter and two glasses of wine a day.

19th.—The improvement in general health has continued. Has no sweats at night or cough. Less running of the pulse, and the cheeks flush only when the hip is dressed. The sore in the ham, produced by the extension of the limb, is slowly healing. Fearing an operation upon the left knee, she, with the assistance of the nurse, has very much overcome its contracted condition.

24th.—Straight splint removed, in consequence of ulceration of the ankle, against which it pressed. Limb placed on a pillow and fixed in a cradle.

Dec. 3.—Can move herself in bed, and admits of being raised for a short time, in a half upright position, with but little inconvenience. Hip-wound stationary ; the draining slightly increased, from the ointment. Bed-sore and other ulcerations healing. The limb lies extended upon a pillow, loosely supported by foot-splints. The left knee still continues much contracted.

12th.—Has gone on well since last report. The hip wound is now filled up with pale scrofulous-looking granulations, and would be pronounced as nearly healed did not a free purulent discharge give intimation of that process being far from sound. She complains much of her back and loins when raised up in bed, which is attributed to rigidity of the muscles, arising out of long recumbent position.

18th.—Has decidedly improved ; feels better than she has ever done ; enjoys her food, and sleeps well. Owing to her still complaining greatly of pain on being moved, she was turned over on her left side, when a loose portion of dead bone was observed lying in the unhealed part of the hip wound, surrounded by pale flabby granulations, on tearing through which, this was removed, and proved to be the necrosed end of the femur, about an inch and a half in length, worm-eaten and spiculated, and the medullary canal hollowed out at the lower part, where it had been thrown off from the shaft of the femur. An examination by the finger could not detect the slightest remaining particle of denuded bone. There is a fresh impetiginous-like pustule on the left knee, which still continues

obstinately semi-flexed. The other external ulcerations are either healed or are rapidly becoming so. The case continues to give promise of well-doing.

The portions of bone removed, measured by a tape drawn from the point of insertion of the round ligament to the upper edge of section, *over the head, curve of neck, and great trochanter, four and three-quarter inches*, and from similar points *below, two and a half inches.* The head of the bone was denuded of cartilage, and a carious cavity admitting the end of the finger existed at its under surface. The under part of the neck was also softened and damaged by caries. The trochanter and remaining shell of the bone retained a seeming healthy firmness. The cancellous structure was filled with pale yellow lardaceous pus.

Remarks.—The propriety of respecting the head of the thigh-bone in *advanced disease of the hip, complicated with dislocation*, practised first in this country by Mr. White in 1822, and revived by Professor Fergusson in 1845, and since recommended by that eminent authority, has been the subject of much discussion, and various strong protests and objections urged against the operation have been most ably met and commented upon by Mr. Henry Smith, who has frequently directed the attention of the profession to the particular circumstances which render a resort to excision not only justifiable, but a *duty*. The details of the above interesting case *may possibly aid* in disarming of influence the sweeping and strongly-expressed unfavorable opinions which have been hastily promulgated; for although, in its present stage, no confident prediction of permanent benefit can be hazarded, nevertheless an auspicious commencement, and upwards of nine weeks' progressive amelioration, create a hope, that the constitutionally depraved condition of the system may, in a degree, expend itself at the outlet still existing at the hip, and the skin ulcerations resulting from long pressure be obviated by the further favorable progress of the case admitting of a more frequent change of position. But whatever be the termination,—*temporarily amended health* only, protracted chronic disease, or death from phthisis,—it must be conceded that the operation, severe and formidable as it appears, has at least in this instance, given a chance of life, and afforded marked comfort and relief to a helplessly deformed girl, who, harassed by pain and worn down by slow and wasting hectic, must, had she survived, have remained in a crippled and pitiable condition to the end of her life.

ART. 67.—*On the Section of the Tendo-Achillis in some cases of Fracture of Bones of the Leg.* By CAMPBELL DE MORGAN, Surgeon to the Middlesex Hospital.

(*Medical Gazette*, Nov. 1849.)

[After referring to the operation of tenotomy, as practised not unfrequently on the continent, in cases of fracture where unusual difficulty is experienced in reducing and keeping quiescent the fractured ends of a bone, the writer related the following cases, illustrative of this practice where the tibia and fibula were the seat of injury, and

the tendo-achillis that of the operation. He believes they are the only instances thus treated in this country.]

The first case is furnished by Mr. Shaw, in whose practice it occurred. W. S., æt. 40, was admitted into the Middlesex Hospital, Feb. 12th, 1847, having fallen down stairs in a state of intoxication. Both bones of the leg were broken, and the fracture of the tibia extended through both malleoli, the foot being twisted outwards. Violent spasm of the muscles frustrated all attempts to keep the fractured extremities of the bones in apposition; the slightest movement brought on this spasmodic contraction, which extended, to all the muscles of the limb, so as to cause great distortion of the foot, and render the skin over the base of the tibia extremely tense. All the symptoms continuing unabated on the following day, and the suffering of the patient being considerable, Mr. Shaw determined on dividing in the usual way the tendo-achillis, which was very tense. After this all the difficulties ceased, and no further trouble was experienced in the treatment of the case.

The second case occurred in the author's own practice: the patient was a female, æt. 66, of drunken habits, and was admitted into the Middlesex Hospital, in March, 1849. She had been knocked down by a cab, and both bones of one leg were fractured a little above the ankle. The symptoms and condition of this patient were very similar to those of the last, and every mechanical and therapeutic measure which could be suggested to relieve the spasm was tried in vain. The author divided the tendo-achillis on the ninth day, with instant relief to the suffering of the patient, and immediate removal of all untoward symptoms. In less than a month the chasm left after division of the tendon, which was not very great, had disappeared; and a fortnight subsequently she was able to walk on crutches, and the foot was free from deformity.

After remarking on the value of the operation in the foregoing cases, in relieving spasm, the author stated, that he thought so simple a proceeding as division of the tendo-achillis might be adopted more frequently in other cases, especially as the cure would not be retarded by it.

Art. 68.—*Instruments for the Relief of Extroversio Vesicæ, and applicable to other forms of Incontinence of Urine.*

The following diagram is taken from an excellent paper by Mr. M'Whinnie, on the history of extroversio vesicæ. It was invented by the late Mr. Earle. The apparatus consists of a concave silver shield, made to fit close to the pubes, and retained in situ by the pelvic bandage, as seen in fig. 2. The urine collected by the shield flows into a reservoir, which may be either in a spherical India-rubber bottle hanging between the thighs, as in fig. 1, or it may be conducted by an India-rubber tube into a concave bottle made to fit upon the calf of one leg, as seen in fig. 2, and supplied with a stop-cock, by which it may be emptied at pleasure. We consider the latter the most complete contrivance for the purpose which could be invented.

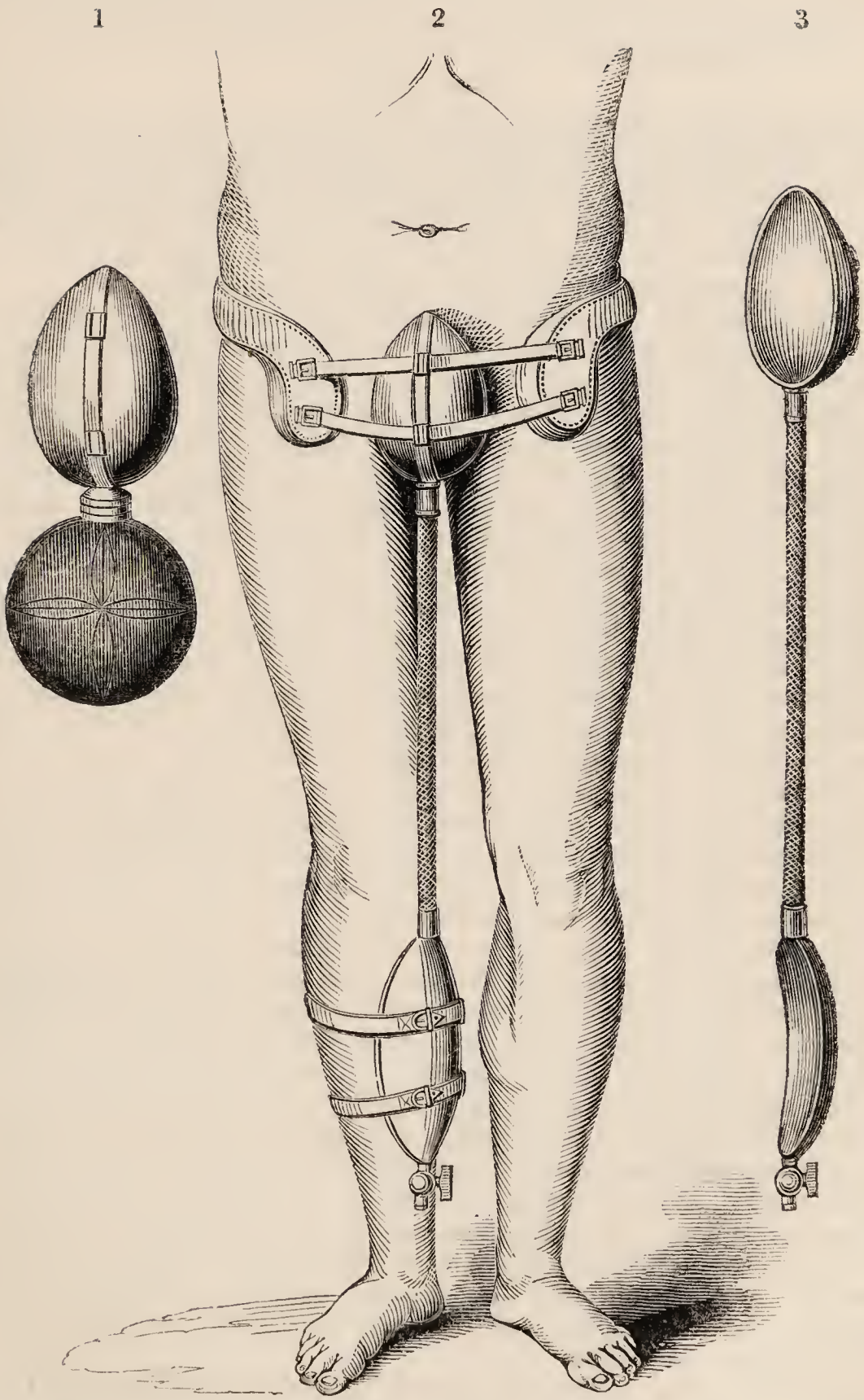


Fig. 2 *represents the apparatus adjusted; and fig.* 3, *the apparatus off.*

ART. 69.—*Encysted Tumour of the Labium successfully treated by the application of Nitrate of Silver to the Interior of the Cyst.* By Dr. MACDONALD.

(*Medical Gazette.*)

Having met with some cases of encysted tumours of the labium, which presented greater difficulty in diagnosis than is stated by writers on diseases of females to exist, and having derived the greatest satisfaction from a peculiar method of treatment of these tumours, Dr. Macdonald was induced to lay the particulars of the following case before the profession, in illustration of these two points.

A lady, æt. 36, consulted him on the 16th of March, 1846. She stated that three years before, after a severe and long journey in the winter, during which she suffered much from the bad state of the roads, she was attacked with violent vomiting, which lasted for a fortnight. After it ceased, she noticed, for the first time, a small tumour inside the left labium, which she considered a rupture produced by the efforts at vomiting, having formerly been subject to inguinal hernia. This tumour gradually increased up to the present time; it was not at any period painful, never receded or diminished in size, never emitted any gurgling sound, nor was it ever the seat of œdematous swelling, heat, or redness. It had gradually increased, and had latterly interfered with her movements, and for some time previous had prevented her sitting down, except with the body reclining far back, and when she sat upon a hard seat, pain of an acute kind used to shoot upwards from the tumour through the sacrum. Latterly she has been annoyed by a sensation of dragging from the loins. The tumour itself had never been the seat of pain, nor had there been any discharge from the vagina, or any irritability of the bladder. The catamenia had been absent for years; she had never been pregnant but once, and then she had a miscarriage.

On examination, a tumour of an oval shape was found occupying the left labium; it was about the size of a goose egg, running along the labium from the anterior fourchette to the perinæum, *and sending a process upwards, for about two inches along the wall of the vagina.* The skin covering it was devoid of any inflammatory appearance, and moved freely over it. There was no pain complained of when pressure was employed. On coughing, *an impulse was given to the tumour when it lay in its usual position*, but when it was lifted up it did not receive any. On percussion, it yielded a dull sound. All attempts at making it enter the abdominal cavity completely failed. No irritation was noticed on its surface; no rumbling heard at any time, nor was the least change produced by the varying conditions of the bowels: when constipated, the tumour was as soft and as small as when they were relaxed.

March 20.—An exploratory puncture was made, and matter of a dark olive colour, devoid of odour, escaped. The opening was enlarged, and a tumblerful of thick fluid flowed out, which was of a creamy consistence, and on microscopic examination was found to be composed of decomposed pus globules, with a large quantity of what appeared to be epithelial scales intermixed. The sac of the tumour

was freely cauterised with nitrate of silver conveyed on a probe, and the orifice kept open by means of a plug of lint.

27th.—The sac of the tumour has been filled up with solid secretion, and has undergone great diminution in size; no general disturbance.

April 1st.—Scarcely any trace of the tumour to be detected, except some thickening of the labium, giving to it a greater fulness and prominence than the other. Ordered to apply mercurial ointment.

10th.—Perfectly recovered, no traces of the disease left.

Art. 70.—*Strangulated Inguinal Hernia reduced by an Infusion of Tobacco, swallowed by Mistake.*—Dr. E. Mitchell records a curious instance of this in a negro, to whom he was called, labouring under strangulated inguinal hernia, of long continuance, attended with fecal vomiting. The warm bath, and all the methods which suggested themselves, having failed to afford relief, and a fatal result seeming to be impending, Dr. Mitchell ordered, as a last resort, an enema of tobacco, made with 3i of tobacco in a pint of water, and left him for the night. The next morning, to the doctor's surprise, at his visit, he found the man walking about quite well. On inquiry, he learned that the patient had swallowed what was intended to be given as an enema; that it produced much prostration, accompanied by relaxation, during which the hernial tumour was spontaneously and completely reduced.

American Journal of Medical Science, April 1850.

Art. 71.—*Treatment of Internal Hemorrhoids.*—Dr. I. P. Garvin, in an interesting article in the 'Southern Medical and Surgical Journal,' (March, 1850,) states that he has treated a considerable number of cases of internal hemorrhoids, some of them very severe and of long standing, by the use of cold water, in the following maner:

He directs about a gill of cold water to be thrown into the rectum immediately before *every attempt* to evacuate the bowels, and that this enema be retained several minutes, if possible. This usually produces an evacuation of the feces, which have been so far softened on their surface, as to permit their escape without the least straining or irritation. After every evacuation, it will be proper to use ablutions of the parts, more especially in such cases as are attended by some protrusion of the bowels.

This treatment is to be continued until some days after all uneasiness is removed. In old or very severe cases, to affect such amendment generally requires several weeks. It is highly important to impress upon the patient the absolute necessity of perseverance in the use of cold water, even though he should be so far relieved as to feel *almost* well, for if it be suspended too soon, a very slight cause will bring on a relapse. So decided is the relief afforded by this treatment, that few persons would be disposed hastily to abandon it, but for the inconvenience of applying it daily. The ordinary apparatus for enemata are so unweildy, that they cannot be carried about

conveniently. All difficulty from this source may be obviated by the employment of a small pewter syringe with a ring handle to the piston. One which will hold two ounces is very convenient, and may be carried in the pocket when necessary.

When such enemata of cold water fail to procure sufficient alvine evacuations, the quantity of fluid may be increased to half a pint, or it may be necessary to resort to mild laxatives. Active purgation must be carefully avoided. The patient should be advised, never to aid the natural expulsive action of the bowels by straining.

American Journal of Medical Science, April 1850.

SECT. IV.—RARE SURGICAL CASES.

Art. 72.—*Congenital Dislocation of both Knees.*

(*Medical Gazette*, Nov. 30, 1849.)

Mr. Davis relates a case of a female infant, born before the full time, in whom both knees were dislocated at the time of birth, so that the soles of the feet turned towards the abdomen. The presentation was natural, but the child was very feeble, and did not seem likely to live. The patella could be felt distinctly, but it was small, and appeared sunk in an unusual hollow between the condyles of the femur. By gentle extension, which gave no pain, the dislocation was reduced, the limbs being retained in their improved position by gutta percha splints. At the end of a fortnight, the knees could be bent in the usual way, and the child is now quite well.

Art. 73.—*Tic Douloureux—Trephining of the Lower Maxillary Bone—Cure.* By Dr. J. M. Warren.

(*American Journal of Medical Science*, April 1850.)

The patient was a lady, æt. 59. Eighteen months since Dr. Warren removed a portion of the inferior maxillary nerve by trepanning the lower jaw, and relieved an excruciating tic, which had lasted three years. The pain returned at the end of eighteen months, when Dr. Warren again trepanned, and removed a portion of nerve, where it enters the foramen. This operation was followed by entire relief.

Art. 74.—*Fracture of the Patella—Subsequent Laceration of Soft Parts.* By Dr. King.

(*Dublin Quarterly Journal*, Feb. 1850.)

[Dr. Croker King has reported the following case to the Dublin Pathological Society:]

A gentleman was tripped by the rope of a canal boat, and ineffec-

tually endeavouring to regain his feet, he fell to the ground, from which he was unable to rise without assistance. This occurred on the 29th of September, 1846.

On examination, a fortnight after, of the seat of the injury, a transverse fracture of the right patella, above its centre, was apparent; the fragments were separated about three fourths of an inch. The injury was treated in the usual manner; coaptation of the fragments was accurately maintained, but bony union did not take place.

On the 2d of March, 1847, five months from the receipt of the accident, the limb was in the following condition: The fragments had become separated to the extent of half an inch; the motions of the knee-joint were still considerably restricted, though it could be slightly bent; the patient could walk tolerably well, without the assistance even of a stick; the joint measured thirteen inches and a half in circumference, the tape being carried round the joint at the seat of fracture. Dr. King was hurriedly summoned on the following morning, the patient informing him that, on the previous evening (while crossing the room), the knee had suddenly bent under him; that he suffered a severe shock, was sensible of something having given way, and that the knee had burst and bled profusely.

On examination, an immense gash presented itself; it ran across the front of the joint, corresponding to the interval between the fragments, which were now separated at least one inch and a quarter. The wound was half an inch wide, seven inches long, and consequently exceeded in extent half the circumference of the limb. It was occupied by coagula of blood, which had become hard and dry, fourteen hours having elapsed from the receipt of the injury. The dried coagula were not disturbed. An attempt was made to approximate the edges of the wound, but was found impracticable, as the skin was adherent to the separated fragments of the patella. The limb was placed on a hollow splint, and the integument supported by broad strips of adhesive plaster, to prevent the further retraction of the edges of the wound, and the entire was covered with light dressing. In a few days severe constitutional disturbance supervened; the tongue became furred, the pulse beat hard and frequent, and suppuration was freely established. On pressing the lower fragment it *yielded*, and a copious discharge of purulent matter issued from the centre of the wound, and from the angles a transparent fluid, presenting the appearance of sinovia; the fever quickly assumed a hectic character.

A deep-seated abscess now formed on the inside of the limb, extending upwards for at least eight inches. The patient's countenance was expressive of much distress; the nights were passed with little sleep; and, notwithstanding the exhibition of three grains of solid opium on the previous evening, the patient had enjoyed little rest, being constantly disturbed by pain and severe spasms extending up the limb. The pulse had risen to 120; the tongue was thickly coated, and the patient rapidly emaciating. There were in addition, diarrhœa with bloody discharges, cutting pains in the abdomen, and night perspirations; in fact, the case was altogether as unpromising as it well could be, and the question of amputation, as the only probable means of

saving the patient's life, of course suggested itself. However, the liberation of the contents of this extensive abscess was first determined upon. An incision was made an inch and a half long, four inches above the joint, and gave exit to ten ounces of most abominably fetid pus, mixed with clots of blood, and sulphuretted hydrogen gas, which bubbled up through the matter; in fact, just such a discharge as is seen in a suppurating hæmatocele. On the following day, the matter having gravitated in considerable quantity, and accumulated in the vicinity of the knee, a director was passed through the wound downwards to the most depending position, and a counter opening made by cutting on its extremity. This great sinus being thus completely emptied, its walls were carefully, and in the most accurate manner, approximated, by means of a circulated bandage and well-adjusted compresses.

On visiting the patient on the following day, the change which had taken place in his general appearance was not a little remarkable. The haggard and fretted look had been replaced by a joyous expression. On inquiring how he felt, he replied, "gaily;" he had, in fact, slept soundly, experienced no pain, the pulse had fallen to 80, the diarrhœa and night perspirations had ceased, and never returned, and the walls of the sinus had become adherent at every point; there was not a single drop of discharge from the incision, nor was there the slightest tension.

From this time the case progressed most favorably; the amount of discharge from the wound, which was a little tedious in healing, daily diminished; and cicatrization was complete on the 4th of April, thirty-three days from the recurrence of the injury.

Art. 75.—*Death from Convulsions, caused by the Irritation of Calculus in the Bladder.*

(*Philadelphia Medical Examiner.*)

Francis M'Fadden, æt. 12, was admitted into the hospital with symptoms of stone in the bladder. Twelve months before a stone was removed by lithontripsy; and in the early part of last summer a new formation was removed by the same process. After each operation his health improved very much, but in the last few months the symptoms reappeared with greater severity. About three weeks before admission he was carefully sounded, but no stone detected. Dr. Peace passed a sound into his bladder, and immediately thought he felt a stone; but fearful of increasing the vesical irritation, withdrew the instrument, and ordered him to be put to bed, and anodynes administered.

During the afternoon he suffered intensely with vesical tenesmus and dysury, and about ten at night was seized with convulsions, which resisted all the remedies employed. In the morning he partly recovered his senses, but was in so exhausted a state that he died in a few hours after, a little over twenty-four hours after he was admitted into the house.

It was afterwards stated by his mother, that he had been in such

constant pain for the few days preceding his death, that he had been unable to sleep, or even to take his food.

The urinary organs were examined sixteen hours after death. The kidneys were very pale, lobulated, and very much enlarged. The right kidney measured five inches in length by two and a half in width. The left rather less. The pelvis and infundibula were much dilated, and the ureters so much enlarged as to resemble the small intestines. In one of the dilated infundibula of the left kidney was found a calculus the size of a large pea, the other infundibula contained a small quantity of pus.

On opening the bladder it was found to contain a stone 1½ inch in length, weighing 246 grains. The mucous membrane was injected, and covered with a thick mucus, and it, as well as the muscular coat, was very much thickened. There were no pouches in the gland. Prostate gland healthy.

The calculus found in the kidney was the triple phosphate. That in the bladder was the triple phosphate with a thick loose coating of phosphate of lime. The whole formed on a nucleus consisting of a fragment distinctly recognisable.

Permission to examine the head was refused. Most probably no organic change would have been found, as it is reasonable to suppose that the convulsions depended upon cerebral irritation propagated to the brain from the bladder and kidneys.

Art. 76.—*Case of Elephantiasis Scroti—Unsuccessful Removal.* By Dr. Child.

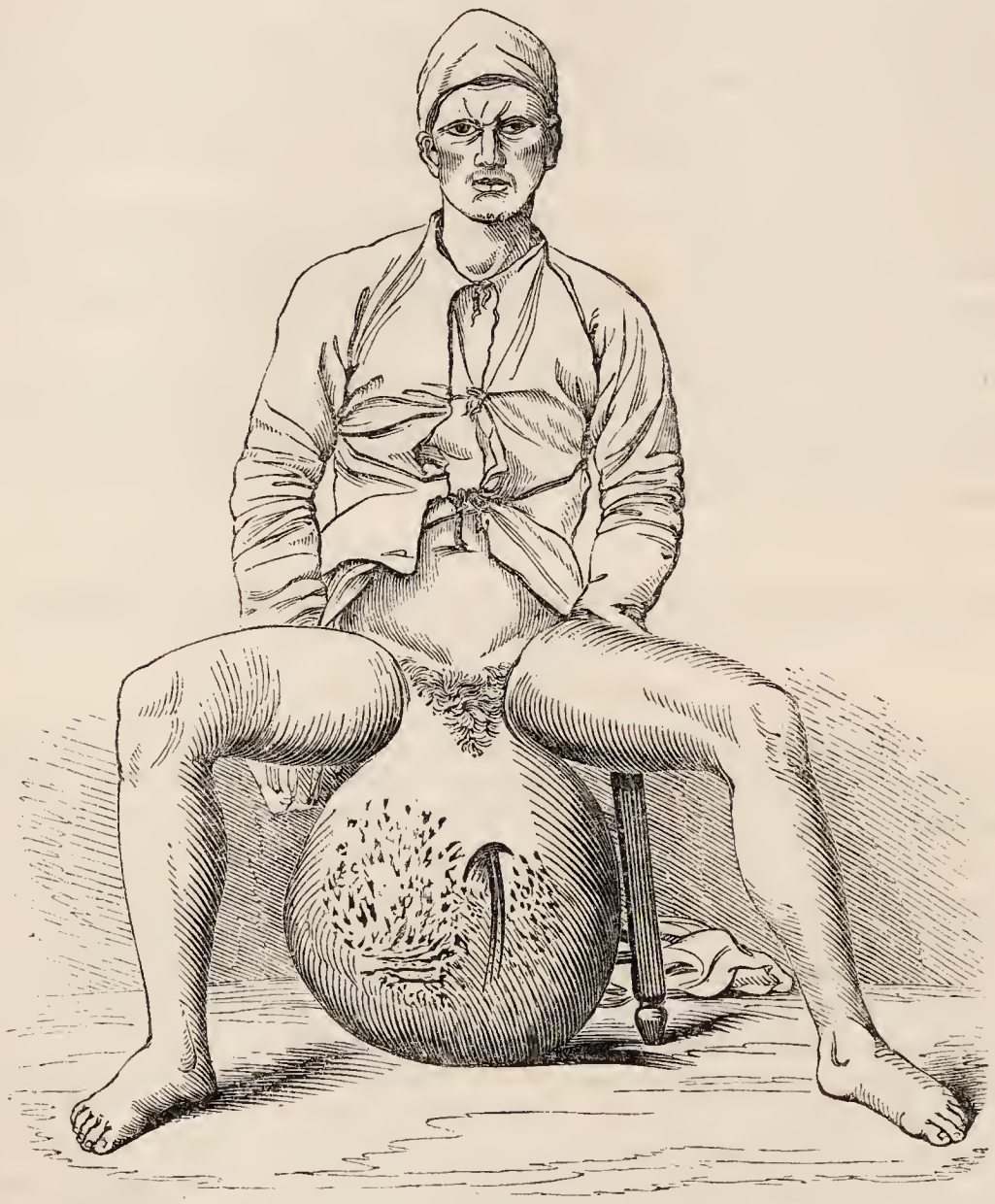
(*Medical Gazette*, 1850, p. 192.)

In the summer of 1849, a man from the eastern part of the Delta, suffering from enormous enlargement of the scrotum, was received into the Pascha's Military Hospital at Alexandria, under the care of Alex. Farquhar, Esq. The tumour had begun four years previously; before which time, however, he had twice undergone an operation for the radical cure of hydrocele. The patient's age was 28, and his general conformation was robust. The appearance of the tumour will be at once understood by referring to the accompanying woodcut, taken from a daguerreotype. It was pyriform in shape, and of the ordinary colour of the scrotum. It reached about half-way down the legs, and almost entirely prevented him from walking. When the patient was seated, with the tumour resting on a couch, a line drawn round it from one side of the pubis to the other measured four feet three inches; and, from its attachment at the symphisis pubis round to the anus, it measured three feet three inches: its circumference at its greatest diameter was three feet eight inches. The tumour was firm, but of variable consistence throughout.

Mr. Farquhar proposed the removal of the tumour; to which the man, worn out with its weight, and other inconveniences, readily consented. With reference to the operation, it may be mentioned that it lasted twenty-five minutes. The first incisions through the integuments were attended with bleeding from numerous small arteries

and veins, none of which required tying. The substance of the tumour itself did not contain any vessels of large size. The penis and the testes were carefully guarded from injury. It was found that hydrocele existed on both sides; each tunica vaginalis containing about two pints of serous fluid.

Previous to the operation, Mr. Farquhar determined, in consultation with Bedan Bey and his other colleagues, to administer chloroform. Accordingly, it was given freely during the operation, with the



effect of producing total insensibility to the pain. On beginning to dress the wound, however, it was found necessary to administer stimulants abundantly, on account of the prostration of the patient; and although these were assiduously repeated after his removal to bed, he never rallied, and he finally sank four hours after the operation.

The chief substance of the tumour was found to be composed of the hypertrophied integuments and condensed cellular tissue; it weighed seventy pounds after the fluid of the hydroceles had drained from it.

A post-mortem inspection was made three hours after death. The

chief morbid appearances were a small cyst near the lower end of the œsophagus containing about an ounce of dark-brown grumous fluid, and an abundance of yellow, peculiar-looking fat, pervading the cellular tissue generally, and likewise attached in masses to many of the abdominal viscera. It was found also in the pelvis and substance of the kidneys, and abundantly in the anterior mediastinum. The heart was healthy; and it is to be remarked that its texture was unusually firm.

With reference to the chloroform question, it will be asked, had the chloroform any influence in this case in bringing about the fatal prostration of the patient? This is a point which will probably be decided by each person in accordance with the views which previous experience or reading may have led him to entertain. Many, no doubt, will look upon it as one case more added to the list of those showing the pernicious effects of chloroform; another class, probably the majority, will consider that nothing is here proved against the use of that remedy. At all events, this is not the first instance where a patient has sunk from the shock of this operation, and that at a time when chloroform was unknown. The operator's own conviction is that the effect of the chloroform was most injurious.

[It must be recollected, that in removing a tumour of this magnitude, a large amount of blood is withdrawn in the blood-vessels of the morbid structure.—Ed. H.-Y. A.]

Art. 77.—*Malignant Tumour of Ten Years' standing cured by strict Bread and Milk Diet.* By Dr. Bowditch.

(*Boston Med. and Surg. Journal.*)

The following is the case of Dr. Twitchell, a well-known practitioner in New England, whose medical history contains these particulars.

1st. Carcinoma has appeared in his family. His grandmother died of cancer of the mamma; his sister of a scirrhous pylorus. These are all the data of his hereditary tendencies that bear upon our main topic.

2d. In very early life, Dr. Twitchell was in delicate health. As a youth, he was stronger and was among the foremost in all athletic sports. While at College, he became dyspeptic, had icterus, with enlarged liver, &c.; subsequently he passed gall-stones. Whilst pursuing the studies of his profession, he began to suffer from asthma, and for about twenty years was very much subject to violent attacks of it, causing orthopnœa, &c. During all this period he ate animal food very freely, three times daily, and digested it easily, whereas vegetable food caused dyspeptic difficulties. Being induced, owing to a severe acne of the face, to abandon this course, he gave up, for nine years, the use of meat. From the period at which he first abandoned meat, he has never had an attack of asthma, and Dr. Twitchell considers these two facts related to each other as cause and effect. Moreover, vegetable food was soon easily borne. After the nine years of vegetable regimen, he began gradually to resume the use of the milder kinds of animal food, such as poultry, and somewhat of the more solid meats,

until two years since, when he commenced the very rigid diet, which will be described when treating of the local disease, which is the more immediate object of this paper. Finally, it may be stated, as indicative, perhaps, of the tendencies of the cutaneous system to morbid action, that about four years ago he had a papular eruption lasting six weeks, and likewise, that very many years ago he had a wart-like tumour on the scalp, which disappeared under the use of creosote externally applied. The acne disappeared after the use, for some months, of a vegetable diet.

3d. The local disease, the course and result of which is presented as the chief object of interest, commenced eight or ten years since, as a small but hard tumour at the internal angle of the right eye. When first noticed, it was about as large as a mustard seed and not painful. He occasionally touched it, and had some suspicion that it might eventually prove to be of a malignant character. It was imbedded in the substance of the cutis, and from the first seemed very slowly to augment in size. At times he *thought* he felt some lancinating pains in it, which radiated to the brow. It did not, however, interfere with the functions of the lachrymal ducts, &c. About 1843 the tumour had become nearly as large as a pea, and a tendency to the formation of a scab was observed. He then was induced to try some local applications, and frequently, until 1845, used Jennings's ointment. This would remove the scab, and displayed three small lobes from which exuded a little purulent fluid. At first the morbid growth seemed lessened by this and other milder applications, but no permanent effect was produced. At times the discharge ceased, but only to return again, and the tumour gradually lost its trilobed aspect. It was at this period quite conspicuous.

August 1845, Dr. Geo. Hayward, of this city, removed the major part of it with the scalpel. For a short time the wound seemed doing well; but finally it did not heal, and two months afterwards it was operated on again, and nitrate of silver was applied.

During 1846-7 various other caustics, and among them chloride of zinc, were used, but the tumour increased in size and threatened to involve the eye. It was seen by several eminent surgeons at the meeting of the American Medical Association, all of whom thought most seriously of it.

Tired of medicine and operations, Dr. Twitchell now determined to try the effects of a most rigid diet. Upon the theory that malignant diseases arise from preponderance of carbon in the system, he lived for a time on bread and milk, consuming daily from four to six ounces of cream, and the same quantity of bread, three times in the day.

The results of this system appeared speedily. The pains diminished almost immediately, as did also the purulent discharge, and it was evident that the disease had remained stationary as to size. In 1848 a steady improvement had taken place, the ulcerated mass had disappeared, and in August, 1849, nothing remained but a small spot like a cicatrix.

The effects of this rigid diet upon the constitution, as a whole, are interesting.

In his mental estate, Dr. Twitchell thinks he has been much less irritable than when he was *omnivorous*.

He had, at one time, an attack of vertigo (to which, however, he has been always liable), and finding that he was *growing corpulent* under the diet, he, for a time, took less of it.

He has always been as strong as when indulging in a more generous diet.

He has been able to breathe better, having had less tendency to dyspnœa.

His digestion has been good, but with a slight tendency to costiveness.

His organs of circulation have been unaffected.

Renal excretion, for years a little disturbed, as is not unfrequently the case in persons of his age.

Finally, Dr. Twitchell presents, the picture of a hale, robust man, in perfect health, so far as one can perceive, and but slightly touched by the influence of his many years of honorable and successful labour.

[Upon this case Dr. Bowditch makes the following reflections:]

1st. The most important topic involved in the foregoing record, is the restoration to health from what seemed to be malignant disease, and that this result followed the strict diet of bread and milk for two years.

2d. The cessation of asthmatic difficulties, after they had troubled the patient for twenty years, and that this cure likewise followed the change of diet—from an almost strictly animal diet to one quite the reverse, viz., strictly vegetable.

3d. Some readers may ask, if these two cures are not merely examples of the "*post-hoc;*" and they may deny that there is any complete evidence of the "propter-hoc." I consent to the doubt, for it has entered my own mind. Nevertheless, if they are mere coincidences, they are pregnant with important suggestions. I confess that, in my own practice, I have never met with any cases so significant of the power that diet, simply and heroically used, has to *reorganize* a man.

[The record of the above case is important, not only as confirmatory of the opinion that malignant diseases may be "starved out," as it were, but as exhibiting the influence of diet in general. Had this rigid dietetic regimen been associated with infinitesimals, or the absurdities of mesmerism, what a blowing of trumpets there would equally have been in honour of Hahnemann and Mesmer.—Ed. H.-Y. A.]

PART III.

MIDWIFERY, AND DISEASES OF WOMEN AND CHILDREN.

SECT. I.—MIDWIFERY AND DISEASES OF WOMEN.

Art. 78.—*On the Detection and Treatment of Intra-uterine Polypus.* By Professor Simpson.

(*Monthly Journal of Medical Science*, Jan. 1850.)

[After some preliminary observations on the obscurity attending the diagnosis of uterine polypi prior to their extension through the os, and a description of the method of expanding the cervix by means of sponge tents, Dr. Simpson speaks as follows of the symptomatology of these tumours.]

The symptoms which might à priori induce a practitioner to conjecture the probable existence of intra-uterine polypus, are of a very uncertain character. They are chiefly these:

1. Menorrhagia, in consequence of the discharge of blood from the surface of the tumour. These hemorrhages take place particularly at the menstrual periods, but are apt to recur at other times. The blood is sometimes fluid, sometimes coagulated; occasionally there is an almost constant red discharge. The effects of these vary, but if profuse, the patient's constitution becomes gradually more and more broken down, and all the symptoms of anæmia in their most marked degree at last supervene.

2. The discharge of mucous purulent or serous matter from the cavity of the uterus in consequence of irritation and even ulceration of the mucous membrane by the presence of the polypus. If a serous leucorrhœal discharge is present, and we ascertain by the speculum that it does not originate in ulceration, or other morbid state of the external surface of the cervix or vagina; and if we further notice, that the discharge issues from the cavity of the uterus, the probability of its originating in some pathological irritation within the uterus will be increased. Sometimes the discharge is fetid.

3. Increased size of the cervix and body of the uterus in consequence of its interior being distended by the presence of a polypus, occurs when the growth is of any size. Not unfrequently intra-uterine polypi are found combined with the presence of fibrous tumours in the walls of the uterus. Fibrous tumours are seldom or never situated in the walls of the cervix, and if the distension affect the cervix, there is more chance of its being a polypus than an interstitial fibrous tumour.

4. There may be symptoms of irritation and pressure upon the bladder, rectum, &c. There may also be sympathetic pains and disturbance of other organs, as the stomach, heart, &c.

But one or more of these groups of symptoms may be absent although the uterus contains a polypus. The mechanical and sympathetic symptoms are the most uncertain of all. There may also be no ascertained increase in bulk of the uterus, for the polypus may as yet be small. The hemorrhage, however, may be great, for the extent of flooding does not depend on the size of the polypus. Further, the leucorrhœal discharge may be entirely absent, as the polypus may not irritate the mucous membrane. And lastly, polypi may exist for a long time without even causing menorrhagia. (Of this Dr. Simpson appends a case.)

Such instances, however, are exceptions to the general rule; and in general the repeated attacks of menorrhagia, draining and undermining the powers of the constitution, forms the principal symptom which should induce the practitioner to ascertain if an intra-uterine polypus exists.

To ascertain this point with certainty, he might gain access to the interior cavity by dilating the os and cervix, by a succession of sponge lints. When an adequate degree of dilatation is obtained, the finger will be enabled to reach the tip of the polypus, and then the pedunculated or polypous character may be ascertained by passing the finger on the uterine found between it and the walls of the uterus. In making this examination, the investigation will be much facilitated by depressing the fundus with the other hand.

The *treatment* of intra-uterine polypi requires to be varied according to circumstances, but particularly by the tendency or probability of the tumour passing downwards or not through the os; by the effects of the symptoms or urgency of the case; and by the size and site of the polypus. Two plans of proceeding may be followed, according to the nature and necessities of the case, viz., first to wait till the polypus descends further; or secondly to remove it immediately. It is a generally acknowledged principle in obstetric surgery, that a polypus of the uterus should be extirpated as early after its discovery as possible. But when it is still included within the uterine cavity, and seems to be gradually making its way downwards through the os, and the hemorrhage and other symptoms are not urgent, it will be better to wait for its descent, after which its removal is easy. But the hemorrhage and debility may be too great to justify the postponement of the operation, or the pedicle of the polypus may be so short, but that it cannot escape from the cervix without dragging down or inverting the fundus, or it may become adherent.

To admit of the removal of an intra-uterine polypus of any size, the cervix must be previously diluted by sponge lints, or it may be necessary to incise any constricting band which does not yield to the tents. After this we may be able to remove the tumour by different processes. Sometimes we may accomplish this by crushing the tumour. In one instance I grasped the tumour with strong lithotomy forceps. In another I crushed a polypus by a lithotrity instrument. Occasionally we may divide the pedicle by a silver wire or ligature, or may reach it with curved blunt-pointed scissors.

[The instrument for ligaturing or dividing the pedicle with a wire is a modification of one sent to Dr. Simpson by Dr. Sabine of New

York. It consists of two parts, viz., two hollow canulæ, as in Gooch, and of a second part resembling the polypus instrument of Græfe, with a heart-shaped ring affixed to its top. The canulæ with their contained ligatures are applied as with Gooch's instrument, and their lower ends are thus passed through the ring, which is made to slide up to the pedicle. The canulæ are then slipped off, and the ligatures are twisted to a knob which moves upon a rack; by moving this knob downward the pedicle is cut through.

[Having in the previous description alluded to polypi of larger size, Dr. Simpson proceeds to speak of certain small vesicular polypii, one or more of which may be attached immediately within the cervix, and keep up a surer hemorrhagic loss.]

These cervical vesicular polypi are of small size, like a pea or orange-pip. Sometimes they are sessile, at others pediculated. They are single or several, generally the latter. When hanging from the os, their stalk is occasionally so long, and the polypus itself so soft and yielding, that it may escape from the finger, and a speculum becomes necessary for its detention.

In removing the vesicular polypi, it is necessary to recollect, that there are generally more than one, and to ascertain this the cervix must be expanded with a sponge tent. After this they may be removed with the nail, scissors, or twisted off with the forceps; their removal is much facilitated by the use of the speculum. To effect a complete cure, nitrate of silver, or potassa fura, must in some cases be applied to the mucous membrane.

[Sponge tents, of which numbers have been made, are made by tying a piece of sponge dipped in gum upon a wire with strong whip-cord, so applied as to give the sponge a conical form; when dry the cord is removed, and the sponge, after being dipped in melted tallow and allowed to dry, is fit for use. They are inserted by the aid of an instrument which goes into the hole left by the wire, either with or without a speculum. They may be of various sizes, from half an inch to two inches long, and a diameter at the base from two eighths to half an inch.]

Art. 79—*On the Causes of retarded Menstruation.*—By Professor Bedford, U.S.—When the menstrual function does not appear at the ordinary period in the young girl, its absence may be usually ascribed to one of three causes: 1st, imperforate os tincæ; 2d, imperforate hymen; 3d, defective physical organization of the ovaries; or, in other words, a want of maturity in these bodies. The first two causes merit the gravest consideration of the practitioner, for they have, in eluding his vigilance, sometimes inflicted the severest wounds on character, and brought ruin on immaculate purity. If, however, the non-appearance of the function be due to defective organization, or want of maturity in the ovaries, this result is at once indicated by the general appearance of the girl. She is, in fact, but a child; her physical appearance presents nothing of that fulness, and has undergone none of those changes, so perfectly characteristic of the advent of menstruation, and so directly dependent on the maturity of the

ovaries. In the absence, therefore, of these physical developments of the system, you may, in almost every case, impute them to tardiness on the part of nature in bringing these bodies to the usual state of maturity. If this reasoning be correct, the indication is obviously not to force nature by drugging the frail system of the girl, but to place the latter under all the influences which common sense tells us are the best calculated to aid in accomplishing the desired object. These influences will consist in improving the digestive functions, exercise in the open air, generous diet, cheerful company, &c. Why, let me ask, does the infant walk? Is it not that its organs of locomotion are sufficiently developed to sustain the weight of the body, and thus afford it the means of progression? What would you think of the physician who, in the absence of this development, should attempt to accomplish locomotion through the agency of medicine? And yet there would be nothing more absurd in such efforts than the attempt to induce menstruation before the ovaries have attained the necessary degree of maturity. This tardiness on the part of nature may be due to several causes: we know very well how remarkably the menstrual function is influenced by climate, race, education, mode of life, &c.; to these may be added, the influence of certain peculiarities of constitution. These latter demand the special attention of the practitioner.

Boston Med. Journal, 1849.

Art. 80.—*On the alleged Frequency of Ulceration of the Os and Cervix Uteri.*—By Dr. Tyler Smith.

(*Lancet*, April 20, 1850.)

[The paper of which the following is an abstract, was read before the Westminster Medical Society, and has for its object the deprecation of the extent to which speculum practice is said to be carried in the metropolis. After quoting the opinion of Mr. Whitehead and Dr. Bennett as to the frequency of ulceration of the os uteri, and stating, that though his practice is equally directed to cases in which such lesions might be presumed to exist, but in which his experience does not accord with the writers mentioned, he proceeds to remark as follows.]

If we consider excoriation or abrasion as a general ulceration, probably no woman ever passes through life without suffering from this form of disease. In the virgin uterus, the circulation is frequently modified by the recurrence of menstruation, ovarian irritation, mental emotion, the varying conditions of the bladder and rectum; and in constitutional ailments, the vaginal and uterine secretions, in common with the other secretions of the body, are frequently depraved. Excoriation and abrasion of the mucous membranes are easily accounted for under such circumstances. Menstruation alone, in the turgidity of the uterus and ovaria, before the catamenial flow is established; in the exudation of blood from the surface of the uterus; and in the perforation of the peritoneal membrane for the elimination of the

ovule from the ovary, trenches very nearly upon pathology. The slightest divergence from the ordinary function merges into disease.

In married women, and those who have borne children, other prejudicial causes in addition to these are in operation: such are the mechanical irritation of coitus, the risk of lacerations of the os uteri during the passage of the child in parturition, and the state of the uterine orifice which obtains after labour, and the return of the organ to quiescence. After labour, the orifice of the uterus does not contract smoothly, so as to leave the os uteri regular and even, but it becomes puckered and contracted unevenly. In irritable conditions of the mucous membrane of the uterus and vagina, or in a morbid state of the utero-vaginal secretions, these folds or corrugations are very liable to be chapped or excoriated, and I believe this is often mistaken for ulceration. All these, and other causes which I might enumerate, explain the frequency with which the os uteri deviates, in colour, volume, and secretion, from the strictly healthy standard. In fact, we may compare the upper part of the vagina to the fauces, which is seldom found perfectly healthy in any subject who may be examined. Some of the indurations and enlargements of the os and cervix uteri appear to resemble enlarged tonsils, and, like them, to increase in size without any amount of active inflammation.

The granulations which are sometimes found surrounding the os uteri—which may secrete mucus or pus abundantly, and which may bleed on being roughly handled—are, I have no doubt, the result of inflammation; but they resemble *the granular state of the conjunctiva*, rather than the granulations of a true ulcer, the granular os uteri offering no edges or signs of solution of continuity, by which we might satisfactorily declare it to be an ulcer. The *granular os uteri* would be a more correct designation in such cases, than "ulceration" of the the os uteri. Some of the so-called ulcerations appear to be nothing more than patches of thickened epithelium, or portions of the os and cervix, from which the epithelium has been removed by acrid or irritating secretions. We can imitate this condition of the parts by the slight application of the nitrate of silver—sufficient to affect the epithelial covering, but not sufficient to injure the mucous membrane beneath.

It appears to me that we can neither receive the existence of excoriation or abrasion; of granulation or fungous growths; the secretion of pus or muco-purulent matter; as affording undeniable evidence of the existence of "ulceration" of the os and cervix uteri. We must try ulceration in this part of the body by the same tests which we apply to ulcers in other parts of the economy. We must look for a solution of continuity, with a secreting surface separated from the healthy structures, having defined edges, everted or inverted,—for an ulcer, in fact, in the common pathological meaning of the term. We find ulcers having these characters in the air-passages, mouth, stomach, intestines, bladder, and other mucous surfaces. There is no mistaking the characters of an intestinal ulcer after dysentery, and there ought to be no mistake about an ulcer of the uterus. Indeed, in the corroding ulcer of the uterus, we unfortunately see that this ulcer is but too

capable of taking on all the qualities of ulceration, in a degree only equalled by its extraordinary vitality, the organ being scooped out, or eaten away, in a comparatively short space of time. Cases are also met with in which the os uteri has been destroyed by the sloughing ulceration, and loss of structure, sometimes following the application of the more powerful caustic agents. We are, however, called upon by the unlimited believers in uterine ulceration to admit that ulcerative disease may exist for years, in its common form, without any perforation, excoriation, serious loss of substance, or altered configuration. Whether we test the so-called ulceration of the uterus by ulceration occurring in other mucous surfaces, or in the uterus itself, under undoubtedly ulcerative disease, the distinctive characteristics are wanting in the great majority of cases; and they certainly are not found, unless I am most egregiously mistaken, in the enormous proportion of 222 cases of ulceration to 300 cases of promiscuous uterine disease.

In all that I have said, I do not wish it to be supposed that I question the frequency of irritation, chronic inflammation, and subacute inflammation, in connexion with leucorrhœa. Recent writers would, however, treat leucorrhœa merely and solely as a symptom, not as an independent disorder. But I am well assured that it is often the disease itself, or at least all of it that we can appreciate; and that the irritable or inflammatory condition is excited secondarily, and mainly, by the morbid leucorrhœal secretion. These depraved secretions irritate the surfaces with which they come in contact, and produce the visible signs of irritation or inflammatory action. We see these discharges sometimes inflame and excoriate even the external integument, but we should never dream of saying that the inflamed condition of the skin was the essential part of the disorder. The same observation applies to the uterus. Thus it is not pathological, nor useful, always to consider the leucorrhœa as a mere symptom; and the old plan of astringent injections, though sometimes mischievous, cannot quite be dispensed with; for in some, even profuse leucorrhœa, an astringent injection, by arresting the utero-vaginal discharges, does more than any other plan to soothe inflammatory conditions, or rather to suspend their causes.

[With these remarks, Dr. Smith, after noticing the rarity of uterine ulceration in the dead-house, proceeds to animadvert upon the ill effects likely to accrue from the neglect of constitutional treatment, and instances the converse error which followed Abernethy's book on the 'Constitutional Treatment of Local Diseases.' He states that there is at the present day "a veritable uterine panic among the upper and middle classes of females, and that every woman with the slightest ache or discharge, is not satisfied until the peccant organ has been ocularly inspected." He concludes by reiterating the importance of constitutional as well as local treatment.]

ART. 81.—*Ulceration of the Os-uteri.—Closing of the Cervix from the Use of Caustic.* By T. WILLIAMS, M.D., Swansea.

(*Medical Gazette*, March 8, 1850.)

[The following case is highly instructive, and should be read with attention by every one engaged in the popular mode of treating ulcerated os uteri. The occurrence is exceptional, but the possibility of such consequences should always be kept in view.

The case was one of displacement with granular ulceration extending, as it often does, up the canal of the cervix; for this, acid nitrate of mercury, and the potassæ c. calce were used as caustics, the latter being freely passed up the cervix. Everything went on satisfactorily until the next catamenial period after the cessation of the treatment, when Dr. Williams being sent for in haste, gives the following account of the case.]

On my arrival, in obedience to an urgent summons, I found that the periodical discharge had been deferred for six or seven days, during which time the general distress and local pains had become more and more difficult to bear. A dragging weight in the back, a dull sense of bearing down, a slight distension and tenderness of the hypogastrium, a frequent desire to pass water, constituted the story of her suffering. The speculum revealed a cervix perfectly free from ulceration, but turgid under the catamenial determination to the part. *The outline of the os could be clearly defined, and nothing could be more distinct than the perfect apposition of the lips of the orifice.* It became immediately evident that the edges of the *os tincæ* had united together; that consequently the excretory outlet of the uterine cavity had become organically closed; and that the menstrual fluid had accumulated in the interior of the organ. This conclusion received support from the history of the case, and a train of collateral evidence. The anterior wall of the uterus afforded to the finger an obscure sense of a yielding bulge. The cervix had unusually descended in the vagina, and to a depth more than proportioned to its size. The patient fondly cherished the idea of pregnancy, and submitted with reluctance to instrumental interference. The symptoms pointed imperatively to the necessity of affording an outlet to the accumulated secretion. A small spatula was accordingly carried against the line marking the situation of the orifice; other *blunt* instruments were used in the effort by gentle pressure to effect the separation of the adherent labia, but unsuccessfully. The edge of a long-handled scalpel was now carefully and gently drawn along the line of the glued aperture, and the point was then carried *into* the cavity of the cervix in a direction coinciding as nearly as possible with the axis of the neck, and instantly dark grumous fluid escaped, to the amount of an ounce, which was obviously the retained catamenia. The part was then carefully sponged, and the incision enlarged so as to correspond as accurately as practicable in extent with the natural orifice. To prevent the re-union of the edges, a plug of cotton was introduced partially into the cervical cavity, and allowed to hang over the margin of the new opening. This proceeding was neither attended by pain nor much hemorrhage. On

the following day the cotton plug was removed, and replaced by one of Dr. Simpson's sponge tents: and, to avert the repetition of the adhesive process, the incised edges were touched with the nitrate of silver. The menstrual fluid still continued to flow in diminished quantity. Enjoining rest and quiet, prescribing the employment of gentle aperients, the artificial opening in ten or twelve days presented every proof of having retained permanently its patulous state; the margins were cicatrized, and no difference could be detected between the orifice thus established by art and the natural os tincæ. All evidences of leucorrhœa have since disappeared; for the last two "periods" the catamenia have appeared without pain, and the patient altogether enjoys a considerably amended state of the general health.

[Dr. Williams continues his communication with several judicious comments, upon the danger which might have occurred had the patient fallen into the hands of a person unacquainted with her previous history, and averse to or ignorant of the use of the speculum. He also states very justly, that this exceptional case must not be viewed as an argument against cauterization of the os uteri, and expresses his belief that no other treatment is so efficacious in the affections for which it is adopted.]

ART. 82—*Successful Extirpation of a Fibrous Tumour of the Right Ovary by the large Peritoneal Section.* By WASHINGTON ATLEE, M.D.

(*American Journal of Medical Science*, Oct. 1849.)

The patient was a lady, æt. 29, the mother of four children. After the birth of the third child, she had inflammation of the right side, after which she discovered a moveable tumour in the iliac region the size of the fist. About three months after she had a second attack, for both she was actively and judiciously treated. The tumour however increased, and was always tender to the touch. Her last child was born Sept. 1, 1847, four months previously to which the tumour was observed to be fixed. Since this date it has increased rapidly. Her general health is good, but she has complete procedentia uteri. When standing, the abdomen has the size of the full term, but it is most prominent on the right side, and overhangs the groin. In the supine position, the tumour fills the whole iliac and lumbar regions as well as the right hypogastric and umbilical region, overlapping both Poupart's ligament and the crest of the ilium. It is firm, but does not fluctuate. The skin over it is perfectly moveable.

In order to be certain as to the nature of the tumour a trochar was thrust into it, but no fluid of any kind followed. The wound healed readily. As no other means of relief remained, the patient was allowed the option of removal by gastrotomy, the dangers attendant thereon being candidly laid before her. At her urgent request it was performed on the 15th March, the patient being previously narcotized by the inhalation of one part of chloroform to two of ether.

The steps of the operation are thus described:—

Immediately upon the full action of the chloroform being established, I made an incision, extending from the symphysis pubis, across the

tumour, below the sulcus, to the middle of the crest of the ileum on the right side. This incision was curvilinear, its convexity presenting downwards, its greatest distance from the sulcus about three inches, while its two extremities approached the sulcus, so that the incision represented the arc of a circle, while the sulcus represented its chord; or, in other words, the former was the bent bow, and the latter its string. The incision was sixteen or seventeen inches long, and was at once boldly carried down to the surface of the tumour through all the intervening tissues. This portion of the tumour was covered by a dense aponeurosis, derived most probably from an expansion of that portion of the united tendons of the internal oblique and transversalis muscles, which is inserted into the linea ileopectinea, and also of the inferior border of Poupart's ligament. The whole tumour, below the sulcus, was covered unequally with this aponeurotic expansion. It was, however, not firmly adherent, but was readily and rapidly detached from the surface of the tumour by the point of the index finger and handle of the knife. By this means (the finger, the handle and edge of the knife), the tumour below the sulcus was easily exposed; but considerable difficulty arose upon reaching the sulcus. This was found to correspond with an indentation in the tumour about an inch deep, and occupied by Poupart's ligament, and the lower edges of the abdominal muscles, Poupart's ligament being tightly stretched, from the superior spinous process of the ilium to the symphysis pubis, across the tumour, and, as it were, sawing into its very substance, and binding it down into the bones of the pelvis. It was with great difficulty that the ligament was dissected from this deep fissure, which being done, a body of muscular tissue—the abdominal muscles—had also to be detached, when finally I came upon the peritoneum, which, at this point was reflected from the surface of the tumour on to the internal surface of the abdominal muscles. The peritoneum was now severed from one end of the incision to the other, after which I passed my hand into the cavity of the abdomen to survey the great body of the tumour, and to ascertain the existence or not of adhesions. There were no adhesions of the viscera to the tumour, and none between the peritoneal surface of the tumour, and the parietes of the abdomen; but the tumour was firmly bound down to the whole iliac fossa. With one hand in the abdomen, and the other on the outside, placed so as to grasp the tumour, I was yet unable to give it the least motion, and upon further examination I found that the tumour was *saddled* across the crest of the ileum, its superior and inferior spinous processes, and across the whole brim of the pelvis to the symphysis pubis, adhering firmly both to the fascia of the dorsum and to that of the fossa of the ileum, dipping down on each side of these bones, which penetrated deeply into its substance, and seemed almost incorporated with it. In extending the survey, within the abdomen, towards the linea alba, I found that the peritoneal coat of the tumour gradually run into, and became part of, the broad ligament of the uterus. While examining this part of the pelvis, I felt the common iliac artery of the right side beating strongly against my hand, and I could trace the external iliac in close contact with the tumour, passing beneath it, and pressed upon by it. A very strong muscular and tendinous attachment, binding the

tumour down to the symphysis pubis, still remained at the internal extremity of the sulcus. This evidently was the insertion of Poupart's ligament, and was cautiously severed, with the hope of being able to tilt up this end of the tumour. Still, although it was liberated from all its coverings, from the grasp of Poupart's ligament, and the lower edge of the muscular walls of the abdomen, the tumour remained immovable. After detaching the pubic end of Poupart's ligament, and exposing this part of the tumour, the round ligament of the uterus came into view, passing close upon the tumour, indeed seeming to penetrate into its substance, curving through the tumour from the uterus to its insertion in the pubis. It was very much elongated and relaxed, and was carefully detached by the knife and left entire. The proper pedicle of the tumour—the broad ligament and Fallopian tube—was the only attachment remaining, excepting those very firm and extensive adhesions to the bony pelvis above described. At this stage of the operation, I felt like coming to a stand, closing the wound, and leaving the patient to her fate; but, upon reviewing the whole ground, I concluded that, although the separation of the tumour would be exceedingly difficult, yet it involved no positive risk excepting the attachment to the iliac and femoral vessels. From the middle of the crest of the ilium to the symphysis pubis, the edge of bone was deeply buried in the tumour, which overlapped it to a considerable extent on both sides, adhering to the fascia of the fossa and dorsum of the ilium. It was plain, therefore, that there was no other danger than the iliac and femoral vessels, which, with proper care could be avoided; and, not deeming the difficulties insurmountable, I determined to proceed with the operation. Passing my left hand into the cavity of the abdomen as a guard to the intestines and iliac vessels, and, at the same time, as a guide to direct the cutting instruments over the face of the iliac fossa, and directing an assistant to seize hold of the tumour that it might be strongly and forcibly lifted up, and tilted from side to side as the separation progressed, I attempted to use the scalpel in the ordinary way; but this was impossible, in consequence of the inconvenient angles at which the knife had to be used, as the tumour overlapped the bones to so great an extent, and was so closely incorporated with them. I was, therefore, forced to introduce the point of the knife between the crest and planes of the ilium and the tumour, and thrust it forward like a chisel, substituting at times the probe-pointed bistoury, at others, a strong scissors, before I could detach any portion of it. I finally succeeded, however, by scalpel, bistoury, and scissors, in relieving it from its attachments to the crest of the ilium, and the corresponding external and internal faces; and next, from the superior and inferior spinous processes, and the corresponding portions of the iliac fossa. This was an exceedingly difficult part of the operation, as the tissue of the tumour itself was so unyielding, as well as its attachment to the bones, that little aid was received from the assistant's efforts to manage the tumour to my advantage. The knife, too, had to be directed solely by the sense of touch, as nothing here could be seen. After accomplishing this much, however, the remaining adhesions to the brim of the pelvis admitted of the tumour being tilted backwards and

forwards, so that the future dissection could be directed by the eye. This was fortunate, as particular caution was requisite, in consequence of the relation of the iliac and femoral vessels to the tumour. Upon attempting to raise the latter from its bed, it was found that these vessels were also elevated, showing an attachment between them, or at least their sheath, and the tumour. Before separating this attachment, I dissected the tumour from everything else. I cut through the sheet of peritoneum, constituting the broad ligament, until I completely insulated the pedicle of the tumour, which contained the Fallopian tube, and then passing around it a six-stranded silk ligature, waxed, but not twisted, Dr. Grant tied it securely. Upon drawing the first knot, the usual manifestations of ligating the Fallopian tube were quite evident. The pedicle, which was small and principally membranous, was now detached close upon the tumour. The only adhesions now remaining were those to the vessels. This dissection requiring great care, and the day being dark, in consequence of the sky being overcast with clouds, I had two sperm candles lighted to enable me to prosecute the balance of the operation with safety. This was satisfactorily done, and the tumour was lifted away.

There still remained, adhering to the ilium, brim of the pelvis, and vessels, small layers of fibrous matter belonging to the tumour, but which could not be separated with it. This was all carefully dissected off, excepting a small portion adhering to the vessels.

The wound was now carefully examined, the clots were removed by picking them out, and the parts well cleansed with soft sponges dipped in lukewarm water. A vein was found bleeding on the internal face of the abdominal muscles, and tied; and the wound was left exposed for some time afterwards. No other vessel required the ligature. The hemorrhage was principally venous, and did not exceed in amount four ounces.

The omentum, which was largely about the wound, was now spread evenly over the intestines, and the wound was brought together, and secured by eight needles with twisted sutures, between which were placed numerous strips of adhesive plaster—the two ligatures being brought out at the nearest points. Over these was laid a thick napkin soaked with lukewarm water, and over all was applied a figure of eight bandage, including the right thigh. The patient had her clothing changed, and afterwards carried to bed. The uterus was replaced in the pelvis. A few teaspoonfuls of brandy and water were given to her, although there was no evidence of great prostration, her pulse having remained good to the last.

The patient, although under the influence of anæsthesia, sufficiently to destroy all sensation of pain, retained a certain amount of consciousness, as she conversed with me most of the time during the operation in reference to its various stages; and when the tumour was removed, she asked if it was out, and requested to see it. It was immediately lifted up and shown to her.

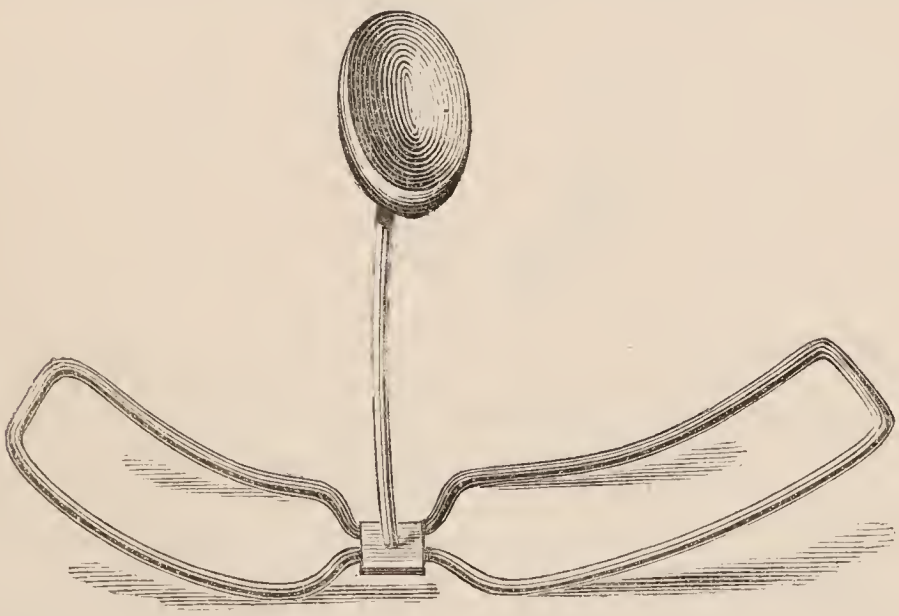
The intestines remained perfectly quiet. The stomach and diaphragm were equally undisturbed. There was no action of the abdominal muscles. Everything about the abdomen seemed almost as passive as

in the subject on the dissecting table during the whole operation, which lasted thirty-seven minutes. The temperature of the room was kept at about 80° Fahrenheit.

The patient was now placed upon absolute diet, and the dressings of the wound were to be kept constantly moistened with cool water.

The condition of the patient after the operation was minutely attended to by several assistants, but scarcely a symptom of any consequence arose calculated to excite alarm. On the 25th she was allowed to sit up. The ligatures came away on the 3d of April, and on the 12th she went out for exercise.

Art. 83.—*On a new Uterine Supporter.*—Mr. Mageniss has devised the following inexpensive contrivance for prolapsus uteri, manufactured by Messrs. Stevens and Pratt, of Gower Street. As may be seen, the pessary is unusually small, but will be found large enough for the majority of cases; where deemed necessary, it can easily be made larger, without altering the principle of the instrument. The stem is slender, yet will be found sufficiently strong to resist the ordinary amount of pressure; from its flexibility, it may be bent to any angle required; the frame is composed of stout wire, so contrived



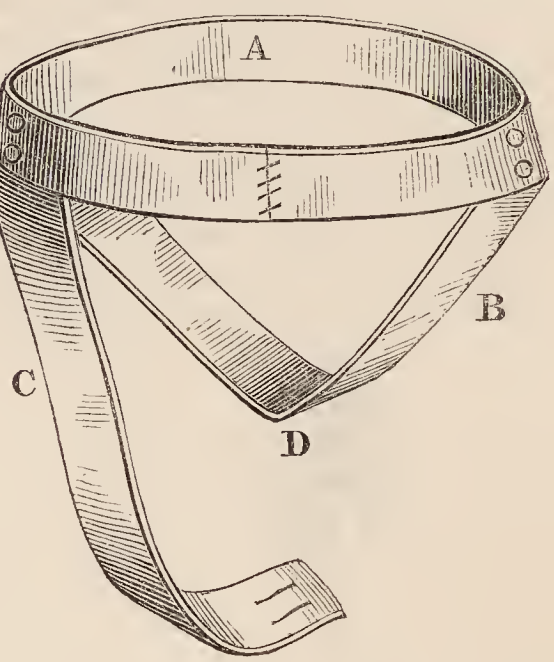
as to prevent any pressure upon the external genitals; neither the functions of micturition nor defecation are interfered with, and the instrument is easily retained in its position by shoulder-straps, or an abdominal belt, as may best suit the taste of the wearer.

Mr. J. W. Nunn considers the support of the displaced womb to be more effectually accomplished by a bandage, which is represented in the accompanying diagram. Its especial purpose is to enable the surgeon to afford support, or apply pressure, to the soft parts forming the floor of the pelvis, according to the circumstances of the case.

To ensure satisfactory results from the adoption of this bandage, care must be taken to make every part fit exactly; and it is by attention to this point that the comfort of the patient is secured. In

certain cases it may be found advisable to interpose a pad between the perinæum and the bandage; this can be so easily effected, that he deems it hardly requisite to offer any directions concerning it.

The advantage that this particular arrangement has over any of the other different modifications of the T bandage is this, namely, it offers a perfectly steady, unvarying amount of support, the tension upon its various parts being quite unaffected by the movements of the trunk. The reason of its possessing this advantage will be apparent, when it is taken into consideration that, whilst the pressure is being made at the perinæum, the *points d'appui* are at the margin of the ilium; and that, therefore, the distance between the point of pressure and the points of tension can neither increase nor diminish.



A is a belt encircling the waist; B is a band attached obliquely to that point of the waist-belt which corresponds to the right hip, and is supposed to have passed between the legs, and to have been fixed on the corresponding point of the left hip by buttons or other means. C is another band exactly similar, having an opposite course, and an opposite attachment, that is to say, fixed to left hip, and after passing between the legs, fixed on the right one. The end which is intended to button is represented *free*, in order to render the diagram more easy to be understood; but it is not difficult to perceive that the two bands, when properly adjusted, will cross each other at the point D, or thereabouts. The bands must be attached to the waist-belt with such a degree of obliquity as will allow of their lying evenly in the corresponding groin when adjusted. The waist-belt can be more or less shaped to the figure, as may be found most comfortable; but it is almost impossible to give precise instruction as to the exact form of every part, on account of the great diversity in the formation of the pelvis in different individuals. Sometimes it will be found requisite to make the bands B and C narrower at the point of crossing than at any other part —at other times this will be found unnecessary.

Art. 84.—*Diagnosis of Ovarian Dropsy.* By Mr. Brown.

(Reported in *Lancet, Medical Times,* &c.)

In a communication to the Westminster Medical Society, Nov. 24, 1849, Mr. Brown remarked that, amongst the general signs of ovarian dropsy, we must place emaciation of the neck and shoulders, expression of the countenance peculiar, indicating, in a marked manner, the presence of this disease. The face is elongated, thin, and partially shrivelled; anxiety and care are strongly depicted on it; the angles of the nose are drawn downwards; the lips are thinned; the mouth loses its curves, the angle being drawn downwards; the cheeks are furrowed; the eyes are remarkably defined, owing often to the sunken space between the eyelids and the bony margin of the orbit; the skin is thin and pale; in short, the whole of the cellular tissue of the face is atrophied; but, unless the disease be malignant, the skin has not the peculiar aspect which it acquires in malignant disease. The extremities are seldom swollen, as in ascites, and, consequently, the patient can walk about with comparative ease. There is generally, also, but little disturbance to digestion, and usually adequate action of the liver. Respiration, and the action of the heart, are less disturbed than in ascites; but the heart's action is feeble, owing to the diminution in the whole mass of the blood. The special signs are: First, we can generally trace the commencement of this disease from one of the ovaries deep down in the iliac fossa; a tumour pressing between the rectum and the vagina may be felt, either through the walls of the vagina or the rectum, not excessively painful, but elastic; on firmly pressing it, especially if at the commencement of the formation of the tumour, you can get it between the thumb in the rectum, and the middle finger in the vagina; but you can also frequently feel an egg-like enlargement around the ovary, through the abdominal parietes, especially if you flex the thighs on the abdomen, so as to relax the muscles. This tumour gradually and definitely increases, still maintaining a rounded outline, and ascends from the pelvic cavity to the abdominal, and rises in the front of the bowels, distending the abdominal parietes, and sometimes reaches the ensiform cartilage, pressing up the liver, stomach, pancreas, and spleen, so as to elevate the diaphragm, and thus contract very considerably the thoracic space. This tumour, which, as it ascends, becomes more fluctuating, occupies the side from which it originates; but whilst it throughout retains a preponderance towards that side, it gradually extends to the opposite. The veins of the abdomen are generally much increased in number and size; the sac containing the fluid being circumscribed, the indications afforded by percussion are also circumscribed, and the sounds on percussion are of course dull over the sac, and resonant over the surrounding intestines. On examination per vaginam, fluctuation can be generally felt through its walls, and the vagina itself is elongated and drawn up, sometimes even under the arch of the pubis; the uterus is also either drawn up or pressed back on the rectum; the cyst is

generally round and smooth on feeling it through the parietes of the abdomen, and moveable from side to side, and is not materially altered by change of position, either recumbent or upright. These special signs apply more particularly to unilocular ovarian dropsy. In multilocular, we almost invariably have an uneven and irregular surface of the cyst, and generally one or more solid tumours, which appear inelastic and without fluid; but in very many cases these tumours will be found to be additional cysts, containing fluid, tense, owing to the pressure of the fluid in the larger one. Mr. Brown had frequently found this to be the case; and this was proved by evacuating the contents of the larger cyst, and again introducing the trocar through the canula still in the opening, thrusting it into the apperently solid tumour, and finding immediately an escape of fluid. On examining a multilocular cyst, fluctuation is not very distinct, if you examine the entire cyst; but if you tap over any one of the sacs, fluctuation is apparent, but only over that one, not being at all communicated to the adjoining cyst or cysts; where, however, the fluid is gelatinous or albuminous, fluctuation cannot be so readily felt. The same observation applies to those cases containing thick, cheesy matter, mixed with pus, and sometimes also with hair. But we have also distinct solid tumours in connexion with these fluid ones, and then there is no sense of fluctuation. This observation applies both before and after evacuating the contents of the fluid cysts. Having ascertained the nature of the tumour, so far as to say whether it is unilocular or multilocular, the next important subject is as to the presence of adhesions. In examining for adhesions, Mr. Brown directed that the patient should be laid in the horizontal posture, and be made to flex the thighs on the abdomen, so as to relax the abdominal parietes; he then moved the cyst from side to side. If this were readily done, he knew there were no adhesions. Again he placed his hand firmly on the relaxed parietes, and moved them over the cyst. If they moved readily, he knew there were no adhesions on the upper and lateral surfaces of the cyst. Again, as the parietes are thin in this disease, he grasped and puckered them up, and then moved them over the cyst, and also saw if they gathered up readily, without raising the cyst itself. If he found these three indications, Mr. Brown determined that there were no adhesions. Another plan, for which he was indebted to his friend Dr. Sibson, is based on the extent to which the contents of the abdomen are forced downwards during a deep inspiration, by the descent of the diaphragm. If there be no adhesions in front, the upper boundary of the ovarian tumour descends to the extent of an inch during a deep inspiration, the place previously occupied by the tumour being now taken up by the intestines; consequently, if you percuss over the upper part of the tumour, a dull sound is elicited during ordinary respiration; but when the patient takes a deep inspiration, an intestinal resonance is there perceptible. Mr. Brown then alluded to those diseases which may be mistaken for ovarian dropsy, and slightly remarked on their peculiar characters.

Art. 85.—*On the Advantages of Opium in Obstetric Practice.* By Dr. Lever.

(*Medical Gazette*, Dec. 23, 1850.)

[After some general encomiums on opium, Dr. Lever, in the present communication, shows its particular applicability in obstetric practice. First he speaks of threatened abortion. He says :]

Abortion sometimes depends upon the mother, sometimes upon the condition of the ovum itself. The maternal causes of abortion are, for the most part, physical or mental; we must add such as are accidental, those which take place from habit, and those which occur from the effects of poison, as syphilis; but abortion most generally occurs from fœtal disease or imperfection, so that the premature emptying the uterus is but an effort of Nature to get rid of that which she cannot perfect. In the management of cases of threatened abortion, it is my rule, if possible, to get a thorough knowledge of the immediate or exciting cause of the hemorrhage or pain, or both; secondly, before using opium, to ascertain the state of the os uteri, and especially whether the anterior part of the neck has lost its plumpness and firmness, and has become soft and baggy. If, with the discharge, we have a patent state of the os uteri, and if the neck be soft and loose, the exhibition of opium will do harm, by retarding the emptying of the uterus, which must sooner or later take place. But, while I do not advocate the use of this drug under the circumstances related, I can speak loudly in its praise after the abortion has occurred, especially if such have been attended with a large loss of blood: it will allay excitement, tranquillise the circulation, and procure sleep. These remarks, however, do not altogether apply to those cases which menace from accident, or from mental causes, or those which may be said to be due to habit. In these, with the application of cold, perfect quietude, and unstimulating diet, I have known the exhibition of opium by mouth—or, what I prefer, a cold starch injection, with opium thrown into the bowel, and repeated every night, or more often, according to existing circumstances—followed by the best results.

But the value of opium is still more clearly exhibited when it is administered to alleviate those pains which precede the establishment of labour in the latter weeks or months of gestation. Many a patient, by its agency, has been carried on to the full end of term who, but for it, would have prematurely parted with her offspring. I had a lady under my care who, six weeks from the completion of her full term, fell on her back. The liquor amnii was evacuated. In addition to absolute quietude, she took opium at irregular intervals till the end of the ninth month, when a living child was born; and this to me was the more satisfactory, as she had on two previous occasions been prematurely confined, although opium had been administered, but with a sparing hand.

Further, we find this drug of great value in certain varieties of natural labour. For instance, at the commencement there may be irregular and spasmodic pains. They are recognised by their acuteness, by the want of consentaneous action in the uterine fibres; some

portion of the uterus during their continuance is hard and contracted, the other portion is soft and yielding; there is no distinct or regular interval of time between the occurrence of pain; and, if untreated or unrelieved, the strength of the patient is exhausted before the establishment of true labour-pains; or the child, which at the commencement presented normally with the head, has its position changed to that of the shoulder, by reason of the uterus contracting on one side, and forcing its contents over to the uncontracting or yielding side. In such a case the utility and value of opium is most marked. It may be exhibited by mouth or *per anum*. It will calm the spasm, subdue irregular action, alleviate pain, procure sleep; and after this, true and regular uterine action will be established. Manifold are the instances of its value I have witnessed in such cases.

Not unfrequently in women who marry late in life, and in those who marry very young, do we find the liquor amnii pass away very early; in fact, before the os uteri has commenced to dilate. This may occur spontaneously, or be the result of violence. At all times this is to be regretted; for, in addition to our losing the efficiency of the bag of water to prepare the way for the passage of the child, the fœtus is brought into close contact with the uterus, which is therefore more strongly stimulated; the head is brought into direct contact with the os internum, the most sensitive part of the uterus; the labour is more painful, and the birth of a living child is rendered more doubtful. Here the cautious and judicious exhibition of opium controls hyper-uterine action, alleviates pain, and gives a better security for the welfare of the child.

Again, in practice, we find women who have suffered in early or unmarried life from one of the forms of dysmenorrhœa, when pregnant and in labour, with the os uteri thin, sharp, knife-like, so that its edge is scarcely to be felt—in fact, is often overlooked by the unpractised finger. The sufferings of the patient are intense; the dilating stage of labour is protracted; and, if untreated or unrelieved, by the time the os uteri is dilated nature is exhausted, uterine effort fails, and such a case is frequently terminated either by the forceps or by craniotomy. In most cases these evils may be averted by the timely employment of opium; and the best mode of securing its good office is in the form of enema.

Further, we occasionally find the first stage of labour rendered tedious by a hardened undilatable condition of the os uteri in women who have suffered from chronic inflammation of the neck of the uterus, or those who have worn mechanical contrivances for the purpose of supporting the viscus, and in those who, from disease imaginary or real, have been submitted to the influence of some escharotic, at the present day by far too commonly practised. This condition of the os uteri needs no description; the sufferings of the patient are excessive and protracted, and, if unrelieved, may be followed by results serious to the mother and fatal to the child. In addition to bloodletting, applicable to some cases, to the warm bath, of immense value, to the exhibition of antimony, and this is of the greatest service, we find that when the latter has been exhibited, and has produced its desired results, relaxation of the os uteri, and increase of discharge, that opium given

in a full dose will render such permanent, and thus prove a most valuable agent in completing a safe delivery. Opium has been recommended most strongly in cases where the os uteri is callous; but if the callosity depends upon previous injury, or is the result of disease, its value, in my opinion, depends upon its power to curb uterine action until vaginal interference removes the obstruction to the passage of the fœtus. But there is another condition of os uteri in which opium acts, and like a charm—in women who have suffered from irritable uterus where the vagina is generally dry and hot, although not over-sensitive; but the moment the examining finger touches the os uteri, the patient shrieks out, shrinks from the attendant, and by her cries and motions proves the suffering she endures. In addition to subsidiary measures, as the warm bath, the injection of linseed-tea into the vagina, great benefit is to be derived from the use of opium, either by the mouth or by the rectum; the latter mode of employment is the one I prefer. Further, in cases of transverse presentation, where it is necessary manually to interfere to bring the long axis of the child to correspond with the long axis of the uterus, we may assist in relaxing the os uteri, and abate uterine contraction, by the exhibition of a full opiate, but I am no advocate for repeated doses. By such treatment the patient becomes narcotized, uterine efforts arrested, and at the time we need contraction to complete the delivery and prevent hemorrhage, nature fails, and our patient is placed in a situation of extreme peril.

Again, in convulsions, especially those of the hysterical form, occurring as they do more frequently during pregnancy than during labour, opium is a valuable remedy. This form of convulsions, evidencing itself, as it does, most frequently during gestation, is readily recognised by the predisposition of the patient, often induced by over-fatigue, mental anxiety, irregularity in diet, &c., preceded by intolerance of noise, sleep short and interrupted, twitchings, startings, copious flow of limpid urine, oppression at the chest, difficulty of breathing, globus pain at the upper part or back of the head; and when the convulsions manifest themselves, the larger muscles are more often affected than the smaller; here we find, after the paroxysm is over, that a mild opiate soothes the patient, allays the twitching, calms the respiration, and procures sound and refreshing sleep.

Secondly, in the anæmic form of convulsions, associated as they not unfrequently are with large losses of blood, where the face is pale, the eyes glazy, the features shrunken, the countenance betokening exhaustion, the lips colourless, the skin cool, the chest heaving, the breathing laboured, the pulse small, quick, and irritable, with noise in the ears, and pain or weight at the top of the head, where there is sleeplessness or restlessness, partial amaurosis, strabismus, and sometimes delirium; while close attention is paid to the position of the patient, especially to the position of the head; while stimulants are administered with judgment; while the contraction of the uterus is secured, opium will be found to act like a charm. Again, in genuine eclampsia, where vascular excitement and relaxation of the soft parts have been accomplished by bleeding, purgation, and tartarised antimony, and where the repetition of the fits seems to depend upon

irritation, I have seen them occasionally checked by the administration of a full opiate. Labour also may be complicated with tumour; here opium will allay inordinate action until we employ those manual or surgical means which are necessary to remove the obstructing cause to delivery. It is true opium cannot take away the mechanical obstacle, but it may, and will, lessen inordinate uterine action; for in practice we find that, if there be any difficulty in the passage of the child, the uterus is stimulated to undue action, and if such be not allayed, or be overlooked, rupture of the viscus itself may take place. This leads me to speak of the efficacy of opium in the treatment of those grave cases where the uterus or vagina is lacerated, or the bladder or diaphragm have ruptured. The two latter lesions are indeed to be regarded as all but hopeless, but not the former; for I have seen cases treated by the administration of full doses of opium, and then repeated at varying intervals for several days, and then terminating successfully. To one woman I was called when there was a band in the vagina, the result of a previous delivery; in this case the laceration was so extensive, that the hand could be passed into the abdomen. Although the patient appeared to be dying, although the last rites of her Church were administered to her, she rallied, recovered, and is still alive. Soon after her convalescence, she had the ill fortune to lose her husband; but she also had the good fortune not again to be pregnant. But the value of opium is perhaps most emphatically demonstrated when exhibited after floodings, whether such occur in the earlier months of gestation, or in the latter, depending either upon the position of the placenta or its partial separation, whether the loss take place after the birth of the child, and the casting or throwing off the placenta; whether this be retained by irregular contraction or morbid adhesion; or whether the hemorrhage takes place after the complete evacuation of the uterus. In these cases, where there is great exhaustion, alarming syncope, great irritability, severe vomiting, and plain, evident, and undeniable indications of great depression of the sanguiferous and nervous systems, or, to use the graphic language of Dr. W. Griffin, "when the countenance is sunk, the eye hollow and glassy, the lips blanched, the skin cold, and the whole person corpse-like; when the pulse is all but gone at the wrist; when the beat of the heart is scarcely perceptible, and stimulants, even brandy, are vomited or useless, opium will act like magic, and save the patient from an untimely grave; but, to do good, it must be exhibited in full doses of one to two drachms of the tincture, or three to four grains, repeating two grains every half-hour or hour until the pulse becomes distinct, the breathing calm, and the jactitation allayed." Whatever may be the *ratio medendi*, whether the congestion produced in the brain be what is necessary to maintain the proper tension of the cerebral vessels, whether it restore the loss of nervous power in the brain itself, is still a point *sub judice;* but no man of much obstetric experience will deny its value under the circumstances thus detailed. I could illustrate its efficiency by the recital of several cases of success, where a patient appeared to be on the very confines of eternity; and in the subsequent constitutional treatment, its exhibition must not be forgotten; it will lessen exhaustion, diminish restlessness, allay vomiting, and procure sleep.

Art. 86.—*Separation of the Pelvic Bones after Labour.* By Dr. Alden, (U.S.)

(*Boston Med. and Surg. Journal*, Feb. 1850.)

[The following is an instance of the above rare and hopeless deformity.]

Mrs. A————, of Cambridgeport, æt. 17, was confined with her first child, Aug. 26th, 1847. Our worthy and astute friend Dr. Alden attended her, as physician and accoucheur. Her labour was natural, but protracted and severe. She, however, soon recovered from the ordinary effects of parturition, but complained of general weakness, and more especially of lameness and weakness of her "back and hips," from which she had not fully recovered when she commenced her second term of gestation, in the fall of 1848. During this entire term, her health was good, and although she complained of general weakness, the local affection of the hips disappeared, or was so trifling as scarcely to be noticed. On the 26th of July, 1849, she gave birth to her second child. I attended, as her accoucheur. Her labour was natural, of comparatively short duration, requiring little if any assistance. The child was large, fat, and healthy, and the mother recovered in a short time from all the *usual sequelæ* of child-bed sickness. Some two or three weeks after her confinement, she complained of a pain, attended with a "strange dragging or pulling" sensation in her back, and on standing or sitting, two large "bunches" appeared, one on either side of the dorsal column. This led to an examination, and a recognition of this sad but highly interesting disease. The bones of the pelvis were loosened from their connexions at every point. There was little soreness and no tumefaction, when recumbent, except what seemed to be a deposition, or infiltration into the cellular texture, in the immediate vicinity of the symphysis pubis, forming an irregular fluctuating intumescence, of the capacity of some two or three ounces. Her evacuations were attended with some difficulty, in consequence of the derangement of locality in the parts concerned. She immediately became faint when she assumed an erect position, and the weakness, "dragging," &c. in her back was intolerable. While standing, the pelvic bones were strikingly distorted. The inferior portion was thrown forward and upward, and the superior portions were pushed dorsal, forming tumours on either side, projecting at least two inches backward, and upward so far as to be in near approximation to the false ribs, exhibiting an unseemly and deplorable deformity of the entire pelvis and hips. When she was recumbent, these parts assumed nearly their normal position.

These troubles increased slowly for five or six weeks; after which, up to the present time, January 1, 1850, the apparent improvement, if any, arises, undoubtedly, from the soft parts accommodating themselves to the derangement. At this period she often mentions a "rubbing, pulling" sensation in her back, whenever she turns or rises up partially, and it is too obvious that the connecting cartilages have been entirely absorbed.

On the 22d September, 1849, the justly-celebrated and highly-

esteemed Dr. Channing, of Boston, was consulted, whose investigations led him, so far as was expressed by him, to deductions corresponding with the above.

More than five months have elapsed since her confinement, and she is still unable to stand, and when sitting it is obvious that the weight of the body is supported by the os coccygis. The ischia are pressed upwards. Her general health is good, and she performs the duties of nurse without inconvenience.

ART. 87.—*Remarkable Case of Double Pregnancy, Uterine and Fallopian.*—Dr. Craghead was called to a negro woman, æt. 35, who, not having menstruated since January, 1849, supposed herself pregnant. About the 1st of April she complained of pains resembling colic, in consequence of which she was bled and took laudanum to prevent abortion. When seen, she was feverish and complained of abdominal pain and tenderness; and, upon examination, a tumour was found in the left iliac region. This was pronounced to be ovarian. She was bled, had calomel and opium, followed by castor oil and turpentine. On the 12th of April she was better, and on the 17th was talking of going out. On the 18th the author was suddenly summoned, and found her moribund. She had been suddenly seized with pain and distension of the abdomen, and was now in a state of complete collapse. On the 15th labour pains set in, and she aborted a three months' fœtus. She died on the 21st.

On opening the abdomen, it was found filled anteriorly with coagulated blood, and posteriorly with serum, which had proceeded from a rent in the fallopian tube, which had been distended with a sac containing a fœtus of the same age as the one aborted.

American Journal of Medical Science, Jan. 1850.

ART. 88.—*Case of permanent Occlusion of the Uterus obstructing Delivery.* By F. W. FOGARTY, M.D. M.R.C.S., London.

(*Lancet*, March 2, 1850.)

Mrs. D——, æt. 25, four years married, previous good health; aborted three months after; successfully operated on for fistula in ano, produced by abscess in perinæum fifteen months subsequent, and recovered rapidly; health in every respect quite re-established; became pregnant November, 1848; health continued good; no vaginal discharge or uterine pains during the first eight months; was then threatened with premature labour; pains strong and forcing for six hours; no vaginal discharge. Got an opiate; remained well for a week, when she was again threatened, and treated in a similar way.

On the 10th of August her pains returned, and continued, becoming hourly stronger. No vaginal discharge; bowels open; urine abundant; presentation cannot be reached by the finger.

11th.—Slept little during the night; pains regular and forcing; is uneasy and fretful; bowels active; urine plenty; pulse 80. The head has partly entered the pelvis; the os cannot be found; the finger

cannot pass in front of the pubis; part of the hand now introduced, and the fingers passed in every direction, but cannot pass the brim of the pelvis, being stopped by the uterine and vaginal attachments all round the head, which clearly proves that the head had not escaped from the uterus; a minute examination is now made, but no os uteri can be found. Being now quite satisfied that I had to contend with a case of occlusion from ulceration, or some such cause, I determined to let matters go on quietly till the head advanced, and that portion of the uterus covering it was more stretched, when I purposed liberating the head by dividing the resisting parts.

12th.—Passed a restless night. Was visited early in the morning by Mr. Alridge, who politely attended in my absence. Pains regular and forcing; bowels open; urine plenty; pulse 86; complains of want of rest, and exhaustion; head more advanced. Ordered thirty drops of laudanum, and to be again visited at two o'clock P.M., when I purpose operating.—Two o'clock: Is anxious to be delivered; slept a little; pulse 86; in other respects as last. I now examined the presentation through the speculum, in hopes of seeing where the os was originally situated; a glistening, irregular, pearly patch existed where the os might have been expected, but not sufficiently marked to prove it to be a cicatrix, but have no doubt that such it was. I now passed on my finger a sharp-pointed, guarded bistoury, and cut from behind forward to the extent of one inch through the glistening expansion, through which the membranes immediately protruded, and having passed my finger through this opening, as also did Mr. Aldridge, and satisfied ourselves that the existing state of things were such as we diagnosed, I continued the incision, by passing the bistoury on my finger between the head and the uterus to the extent of from three to four inches, then withdrawing the finger, and placing it outside the uterus over the point of the bistoury, passed the point through to the finger, and cut out, as in fistula in ano; having done the same to a less extent in front, the case was left to Nature, and though the pelvis was rather contracted, labour terminated without further assistance in three hours, by the birth of a full-sized living boy, since which time the mother has gone on uniformly well, not having a single bad symptom; she is now up, and able to be about the house.

In such a case as the above it is just possible to mistake it for a head-presentation, where the os was fully dilated and the head passed through. I need scarcely allude to the consequences such a mistake would lead to if it were deemed requisite, from a contracted pelvis or other cause, to have recourse to instrumental delivery. It is well also to bear in mind, that in consequence of the stretched state of the uterus, the knife should not be carried too far back or forward, so as to avoid wounding the uterine attachments, which must also be extended to a certain extent, and therefore likely to be wounded if this precaution were not taken. At the same time, I think the incision should be as large as these circumstances will admit, so as to prevent a rent, which, if once commenced, no knowing where it might end. On the same principle I prefer an extensive longitudinal incision to a crucial one. In the after treatment I was naturally impressed with

the importance of preserving a free opening from the uterus, but had no cause to interfere, as the parts healed by granulation, leaving a sufficiently large opening to admit the index-finger.

ART. 89.—*Case of Hydrometra.* By C. D. PURDON, M.B.

A young lady, æt. 18, of lymphatic temperament, well-formed, breats unaltered, abdomen very large, states that, nine months previously the catamenia ceased, after great mental agitation, and in some weeks she began to have attacks of morning sickness, and perceived her abdomen to enlarge. From this time she increased gradually in size, until the ninth month, when she appeared in the last month of utero-gestation. The os uteri was small and virgin-like, cervix long and thin, the uterus appearing much depressed. At this time she suffered from an attack of enteritis, which yielded to the usual remedies; in some days after she had a slight bloody discharge from the vagina. She then had regular paroxysms resembling labour pains for three consecutive nights, being well during the day, when a yellowish-coloured serous dircharge began to issue from the uterus, and continued four weeks, the abdomen falling gradually each day, till it recovered its usual size. In a few weeks she had a return of catamenia.

Dublin Quarterly Journal, Feb. 1850.

SECT. II.—DISEASES OF CHILDREN.

ART. 90.—*On the Paralysis which attends Dentition.* By Dr. FLIESS.

(*Journal für Kinderkrankheiten*, and *London Journal of Medicine*, Jan. 1850.)

The extraordinary progress which has been made in neuro-pathology by the labours of English, French, and German physiologists, has only lately caused especial attention to be directed to the paralytic affections with which young children are attacked. These affections are not unfrequent, but have not been long known. By some they have been mistaken for rheumatism, even though the child complained of no pain; while others have treated them as the effects of a blow or contusion. And we meet with cases in which sudden paralysis of a limb has been even considered as a sign of rudeness or naughtiness, just as the nocturnal eneuresis of children was until a short time ago; for which children used almost always to be chastised with rods, or in some other way, and of which we have only lately become convinced that it depends on a paralysis of the muscles which close the bladder, or rather on an excessive excito-motor activity of those which expel the urine.

In using here the term paralysis of dentition (*dentalparalysen*), we would have no other paralysis to be understood than that which arises from dentition. We intend first to describe the mode of attack of

these paralytic affections, and then to endeavour to point out their cause.

Paralysis is much less frequent during the first than during the second dentition; at least, we have not had an opportunity of observing its occurrence in the first dentition. It is possible that, as children at this time have not yet the full use of their limbs, the affection may more readily escape notice than during the second dentition, when the children can run about, and employ their limbs in performing various actions. We believe it, however, to be well established, that convulsions are much more frequent than paralysis during the first dentition; and that, in the second, the ratio is changed, or, at least, paralysis is as frequent as convulsions. We take this opportunity of remarking, that the older the individual is, the less frequently do convulsions supervene on dentition; while paralytic affections, and, at a later period, especially during the development of the posterior molars, neuralgia, are much more frequent. We shall hereafter have occasion to make use of these facts.

The attacks of paralysis of dentition are almost always sudden. A child is cheerful, takes exercise, and plays as usual, has a good appetite, and goes to bed in the evening apparently quite vigorous. At first, perhaps, it sleeps very quietly; but it soon throws itself about in a restless manner, groans and screams out in its sleep, grinds with its teeth, is thirsty, has some heat of head, and is rather feverish towards morning. On the next day, when perfectly awake, it is unable to use one of its arms, or, in rare cases, an arm and a leg. If the arm alone be paralysed, it hangs down; it is indeed warm, but, in consequence of the gravitation of the blood in the limbs, the joints of the hand and the fingers are blue-red and swollen. The child cannot move the arm; sensibility is either entirely lost, or is very obtuse; and the excito-motory power can but little, if at all, be excited by strong stimulation. If a medical man be summoned, who does not think of paralysis from dentition, or knows nothing about it, he does not know how to reconcile the sudden attack of paralysis with the otherwise apparently healthy state of the child, which, as has been said, has but little fever, and complains of no pain whatever. He gives it as his opinion, that the child has probably laid on the arm during the night, and pressed on the nerve; and he leads the parents to hope that, in a day or two, the effect will spontaneously be removed, just as, in a limb benumbed or asleep through pressure, the removal of the pressure is followed by a return of its power. But when, after some days, this result does not follow, but the limb remains paralysed, and the parents become more anxious, the medical attendant is puzzled; he suspects that something of more importance is at the bottom, and he prescribes accordingly. But what does he order? Friction with opodeldoc, camphorated spirit, &c.; and then, perhaps, imagining that there is some deposit, he goes on to order friction with iodine ointment, mercurial ointment, embrocations, &c. We have seen a case in which the rotatory, electro-magnetic apparatus was diligently used; nevertheless, the arm remained paralytic, and at last became atrophied. In another case, the medical attendant could not be divested of the idea that there was a subluxation: he pulled the child's arm about, until,

having had his attention called, by a colleague, to the utter loss of power in the limb, and to the great impairment of sensation, he was convinced of the existence of paralysis.

The paralysed arm usually hangs down as if dead; and if the child at last complain of pain, it is from dragging of the muscles of the shoulder. The paralysis sometimes extends to the leg of the same side; the child is then unable to move it, and the sensation is lost, or at least impaired. More rarely, one arm and both legs, or both arms, without the legs, are affected.

The duration of the paralysis is very uncertain; in many cases it lasts from a fortnight to three weeks, in others many months, and even, in some, many years, and then becomes incurable. Convulsions not unfrequently precede, or occasionally accompany, the paralysis, without any cause, or from a very slight one. If the child be in a passion, or annoyed about anything, the paralysed limb sometimes becomes convulsed, and performs various movements which the child has not power to restrain. These convulsive movements are also produced by the use of electric shocks; or evident vibrations of the muscles manifest themselves, on the application of a continued electric current by means of the rotatory apparatus. The cases which we have observed, were not preceded by convulsions; but several colleagues have observed their occasional occurrence. The termination is not unfrequently favorable, under judicious treatment; the paralysis passes off gradually, and at last entirely ceases, with a pricking or stinging sensation, or a feeling of formication. But not unfrequently the paralysis is obstinate; it resists the ordinary remedies; and other symptoms, indicating an affection of the spinal cord and brain, appear. The child is attacked with dyspnœa, palpitation, twitchings of the muscles of the eyes; it begins to squint, becomes dull, falls into a comatose state, and dies. The paralysis may become chronic; there are then no obvious indications of affection of the spinal cord or brain, but the affected limb remains paralysed, and ultimately becomes atrophied; the individual may be, in other respects, in the most flourishing health, even active and strong. Cases have been sometimes met with, in which individuals of muscular and powerful build have had an arm paralytic and arrested in development; and, when asked as to the origin of the paralysis, they can give no other answer, than that they have had it from childhood, and that a cold, negligent treatment by a physician, a fall, a blow, or whatever they think must be assigned, must have been the cause.

There are, unfortunately, but few autopsies recorded which can give an explanation of this form of paralysis. This perhaps depends on the circumstance that the affection is seldom fatal; at most, the opportunity is afforded in chronic affections of this kind, when death has resulted from the supervention of some disease, or from an affection of the spinal cord or brain. But then the appearances presented are rather to be considered as results of the disease, which has more lately supervened; at least, it is then difficult to distinguish the primary from the secondary lesions in the brain or spinal cord.

In one case only we have had an opportunity of making a post-mortem examination of a boy, who, while suffering from recent

paralysis of one arm, was killed by being thrown from a carriage. This is also the case which first drew our attention to the form of paralysis under consideration.

Case.—Rudolph Meyer was, at birth, a strong well-made child. He was nursed by his mother, and at the end of the tenth month he was weaned. The first dentition was easy, being attended only with slight indisposition, which made him rather lean. He soon recovered, and was apparently healthy up to five years of age. During this time he had hooping-cough, which went through its usual course and somewhat weakened him; but when it was ended, his health was perfectly re-established. At the end of his fifth year he was frequently troubled with loaded tongue, some fever, heat of head, and flushed cheeks; these symptoms soon yielded to the employment of mild purgatives. From time to time he had, for a week at a time, restless nights; he cried out in his sleep, ground his teeth, got up as if to walk in his sleep, and was, although apparently well, very tired in the morning. One morning, on awaking after such a restless night, he had complete paralysis of the left arm. This arm hung loosely by his side; the hand was very red, and the joints somewhat swollen. The child could not perform any movement with the limb; if it were raised, it was as heavy as the arm of a dead person, and fell again as soon as it was let alone. The warmth of this arm did not differ from that of the other. It felt a little colder; but the thermometer indicated no difference of temperature. The pulse in the left arm was somewhat weaker than in the right; but there was no difference in frequency. The boy did not feel when the arm was pinched or pricked with a needle. This loss of sensation was more obvious on the extensor than on the flexor surface of the arm; it was least on the radial side. Here, as far as could be gathered from his account, the boy had an obscure perception of the above-named irritants; and, when he slept, the arm was slightly convulsed when irritated on the radial side. In other respects, the boy complained of no pain; he had some cough, was cheerful, played about, and scarcely troubled himself about his arm. A great variety of remedies were employed. At first the cause of the paralysis could not be understood; an examination of the arm, shoulder, and spinal column, showed nothing. An examination of the mouth made it probable that the paralysis was connected with dentition: the anterior milk-molars were found lying half decayed in the gums, and near and between them were the edges of the permanent molars in a row in the gums. We resolved to have all the remains of the teeth extracted next day by a dentist, so as to make room for the new teeth, but on the same day the boy met with an accident which deprived him of life. Having been taken, by his parents, to see a relation in the country, he was thrown on his head from the carriage, and died towards the evening.

A careful post-mortem examination was made. There was a considerable fracture of the skull, and also injury of the brain, which was the immediate cause of death. But the most interesting point was the state of the upper part of the spinal cord. This showed, in the vicinity of the roots of the brachial nerves, a very remarkable degree of vascularity: the membranes were here reddened, and the whole

circumference seemed congested; the veins at least were here fuller, and more prominent, on the left side than on the right. There was no true organic alteration to be observed, either in the spinal cord, or in the roots of the nerves, or in the brachial nerves, so far as they could be followed. On tracing the blood-vessels, it was found that the turgescence of the veins on the left side extended on the shoulder and neck, as far as the face, where all the veins were fuller and more prominent than on the right side. The veins in the neck and submaxillary region were remarkably prominent. There appeared to be no doubt that dentition had produced this state of the veins; and, moreover, that this congestion, having extended to the spinal cord, had probably produced pressure on the roots of the brachial nerves, and thus induced paralysis of the arm.

This autopsy fully confirms Dr. Marshall Hall's views of the origin of paralysis; and, although we have no other foundation than this single case, we may here lay down certain rules for treatment, leaving it to subsequent researches to determine whether they are perfectly correct. The rules, which we deduce from our observations, are the following:

1. When a child, during the first or second dentition, is suddenly seized with paralysis of one arm, or of the whole side of the body, or is affected in only a part of the same, without any obvious external cause, this is to be considered as a *paralysis from dentition.*

2. An accurate examination of the mouth will confirm the diagnosis; for the teeth will be found firmly compressed within the gums. Generally the molar teeth are at fault; much more seldom the incisors; at least in those cases which we have found recorded by various writers, where the situation of the teeth has been given, the molars have almost always been mentioned as in progress of escaping from the gums.

3. The consequence of this dental irritation is obviously an increased sanguineous congestion. In some children, this may extend to the brain, and thus produce convulsions or some cerebral affection; in others, however, the congestion is limited, for some unknown reason, to the external veins, and extends to those which are between the muscles, and even to the vertebral veins and their minutest branches, so that the roots of the brachial nerves are compressed. Hence arises paralysis, which is generally confined to that side where the dental irritation has given rise to congestion.

4. By obviating the venous plethora, the pressure on the roots of the nerves, and consequently the paralysis, is prevented. But if the congestion be intense and permanent, the pressure may produce partial atrophy of the roots of the nerves, and consequent permanent and incurable paralysis.

5. The application of stimulants to the paralysed limbs, or even the use of electricity, can produce no effect. Repeated cupping in the neighbourhood of the origins of the nerves, scarification of the gums, wrapping the paralysed limb in flannel, mild purgatives, can alone produce any result.

ART. 91.—*Treatment of Tubercular Meningitis.* By Dr. RILLIET.

(*Prov. Med. and Surg. Journal*, Feb. 20, 1850.)

The treatment is prophylactic and curative.

Prophylactic.—The child should be accustomed from a very early age to have but little covering to the head, and the hair cut short. The limbs should be kept warm, the head raised in bed, and the bed-clothes light. Premature development of the intellectual faculties should be restrained rather than encouraged; exercise must not be carried to fatigue; and the general hygienic treatment advised for scrofula is to be adopted.

Curative.—The indications are, first, to attack and subdue acute inflammatory symptoms; then to favour the passage of the tubercular affection into a chronic state; and afterwards to treat this by the means best adapted for its removal.

The following is a *résumé* of the treatment:

A. A strong and healthy child is suddenly taken with severe head-ache, attended with vomiting and constipation; the pulse is slightly accelerated, and there is some fever; the intellect is clear. An attack of meningitis has commenced, and the following treatment should be adopted:

1. From four to ten leeches, according to age, to the anus or inner part of the thighs.
2. Give in the course of the day from twenty to forty centigrammes of calomel, according to age, in doses of from five to ten every two hours.
3. Administer a clyster of castor oil or some other purgative.
4. Cover the feet with hot flannels, or linseed-meal poultices lightly sprinkled over with mustard.

If the pulse maintains its frequency, but not otherwise, the leeches are to be repeated on the following day.

B. The disease makes progress, or the physician is not called in until the second stage has arrived. The vomitings have ceased; the constipation continues, or is overcome with difficulty; the pulse is slow and irregular; the abdomen retracted; the intelligence remains unaffected, but the peculiar confused expression of countenance is observed.

1. Give calomel as above described.
2. Let mercurial and iodine ointment be rubbed daily into the upper part of the thighs.
3. Apply cold cloths to the shorn scalp.
4. Apply mild mustard cataplasms.

C. The disease continues its course; the child answers questions slowly; there are alternations of coma and drowsiness; the pulse is still slow and irregular. The following treatment is to be employed in addition to the preceding:

1. A large blister to cover the chief part of the shorn scalp.
2. If the blister cannot be employed in this manner, it may be applied to the inside of each thigh, or to the calf of the leg.
3. If constipation be not yet overcome, some castor or croton oil

should be given instead of the calomel, but the dose should not be repeated.

D. The disease having arrived at the third stage, the pulse being frequent, the coma profound and uninterrupted, &c., the only treatment which at present can be recommended is,

1. The application of cold.
2. Mercurial or iodine frictions.
3. Suspension of the calomel if there be diarrhœa.
4. Mustard cataplasms.

E. A child in good health is seized on a sudden with some of the symptoms of meningitis; there is headache recurring at intervals, and accompanied with vomiting and slight constipation; but there is no pyrexia, and the symptoms continue some time without the supervention of the second stage.

1. Prescribe the treatment for tuberculization in general; employ iodine and ferruginous preparations; exercise in the open air with the head uncovered, avoiding exposure to the perpendicular rays of the sun.
2. Keep the hair short, and use iodine frictions to the head.
3. When symptoms of meningitis become marked, recourse must be had to the treatment advised under the head A.

F. A child of strumous habit has pain in the head, and spontaneous attacks of vomiting; tubercular meningitis is to be feared, and in addition to the general treatment of scrofula, iodine frictions to the head should be employed. If the symptoms of meningitis become more decided, the treatment indicated under A must be had recourse to, with the exception of abstraction of blood.

Art. 92.—*Diagnosis of Cerebral Tubercle.* By Dr. Rilliet.

(*Prov. Med. and Surg. Journal*, May 1, 1850.)

M. Rilliet establishes the diagnosis of cerebral tubercle on the following general considerations:

1. The age of the child, the cerebral form being much more frequent after, than before, the age of three years.
2. The circumstances which preceded the attack, and particularly the causes under the influence of which the disease was developed.
3. The state of health at the period of invasion.
4. The primary symptoms,—as convulsions, lancinating headache, (continued or intermitting,) paralysis, amaurosis, and, much more rarely, rigidity.
5. Lesions of the cranial parietes, exophthalmia, nasal or auricular discharge coinciding with cerebral symptoms, or having been preceded by continued vomiting.
6. The chronic progress of the symptoms deserves especial consideration, for time alone will sometimes discover the nature of the disease. Chronic symptoms, with reference to motility, are more to be depended upon than disorders of the intellect.
7. It is necessary also to keep in remembrance the great frequency of tubercular disease in childhood, and the infrequency of other kinds of chronic cerebral disease.

The diseases with which tubercles of the brain may be confounded, are either organic or functional. *Of the former:*—1. Meningitis. 2. Hypertrophy. 3. Hydatids and cancer of the brain. 4. Chronic arachnoidean hemorrhage. 5. Chronic hydrocephalus. *Of the latter:*—Convulsions, rigidity, and paralysis.

When tubercular disease of the brain begins with the symptoms of *meningitis*, without convulsions, it is impossible to denote the characters by which these two diseases may be distinguished, until a more advanced period of the malady. When it presents itself under the chronic form, it is necessary, in order to establish the diagnosis, to distinguish cases in which it commences with convulsions from those in which it is announced by other cerebral symptoms. In the former, it may be confounded with hypertrophy of the brain, chronic arachnoidean hemorrhage, convulsions, and epilepsy; in the latter with hydatids and cancer of the brain, chronic hydrocephalus, and rigidity.

1. *General hypertrophy of the brain.*—The circumstances which precede the convulsions are the guide in cases of this nature. For instance, a child has a large head, which has increased in size in a disproportionate manner, without producing well-defined cerebral symptoms. If, under these circumstances an attack of eclampsia supervene, followed by nervous symptoms in a chronic form, we may suspect the case to be hypertrophy, arrived at its second stage.

2. *Chronic arachnoidean hemorrhage*, attended with some enlargement of the head, and simulating hydrocephalus, may be mistaken for hydrocephalus resulting from cerebral tubercles. The diagnosis is based upon the following considerations: *The age of the child:*—Chronic hemorrhage in the form of hydrocephalus being a disease which occurs exclusively in children under three years of age, whilst hydrocephalus from cerebral tubercles is rare before that age. *The mode of attack:*—Tubercular hydrocephalus being frequently preceded by convulsions, whilst this symptom is more rare at the commencement of arachnoidean hemorrhage.

3. *Cancerous tumours.*—The only characters by which we can here arrive at a probable diagnosis, are,—the previous history, hereditary predisposition to scrofula, signs of tuberculization, (general or local,) and especially the great frequency of encephalic tubercles in children compared with the extreme infrequency of other kinds of cerebral disease. But we find, in authors, cases of hydatids and cancerous tumours of the brain which have followed a course precisely similar to that of cerebral tubercles.

4. *Idiopathic epilepsy*, like cerebral tubercles, begins with convulsions; and it may happen, that after a first attack we observe derangement of the general health, slight pyrexia, vomitings, and various disorders of motility—symptoms which do not present themselves after succeeding attacks. It is, therefore, of the greatest importance in cases of this nature, not to pronounce hastily, but to suspend our judgment for a few days. If epilepsy be essential, the child will maintain a state of perfect health; whilst, if it be connected with the existence of cerebral tubercles, there will almost necessarily be more or less disorder of motility, of the functions of the organs of the senses, or of the intelligence.

5. *Essential rigidity of the extremities* is sometimes difficult to distinguish from that connected with cerebral tubercles. The following considerations will aid the diagnosis:

This symptom very rarely marks the commencement of the latter disease, because it depends upon softening, which is always consecutive. When it does take place at the commencement of the attack, the stiffness exists not only in the fingers and toes, but also in the muscles at the back of the neck.

Moreover, essential rigidity is but a symptom of some actually existing acute disease, general or local, and is not attended with the cerebral symptoms. And, lastly, under appropriate treatment, it has a tendency to disappear rather than to increase.

6. *Essential paralysis* of the extremities is a rare affection. It is distinguished—1st. By its mode of attack, the paralysis being instantaneous and complete; whilst it generally comes on gradually when caused by cerebral tubercles. 2d. By the absence of every other nervous symptom, except loss of motion. It also occurs in very young children, whereas the paralysis of tubercular cerebral disease occurs principally in those who are more advanced in life.

The *prognosis* is always unfavorable; indeed we are not cognisant of a single well-authenticated case of recovery.

Children are most liable to cerebral tuberculization, with symptoms, from three to ten years of age; it rarely occurs at an earlier period, and very seldom from eleven to fifteen years. Boys appear to be more subject to it than girls.

Art. 93.—*Diagnosis of Croup, and certain allied Affections of the Respiratory Organs.* By W. Kesteven, M.R.C.S.

(*Medical Gazette*, March 29, 1850.)

[The author, in the first place, enters upon a critical inquiry into the definition of croup, and submits the following propositions:]

1. True croup consists in inflammation of the mucous membrane of the *larynx* alone, concurrently with, or giving rise to, spasmodic action of its muscles.

2. Laryngismus consists in convulsive action of the muscles of the larynx alone *primarily*, other muscles of the respiration becoming implicated *secondarily*, but unattended with inflammation.

3. Laryngitis, or inflammation of the mucous membrane of the *larynx alone*, without the spasmodic action of croup, is rarely met with in children, except as an occasional extension of tracheitis, or of inflammation of the pharynx.

4. Tracheitis, or inflammation of the mucous membrane of the trachea, is the pathological condition giving rise to what is known as *croupy cough*.

These propositions the author tests by a reference to the pathology and semeiology of the four forms of disease mentioned, confining himself to the consideration of those features in each which are diagnostic.

1. *Croup.*—In the true form of this disease, the patient is suddenly,

perhaps without any, or it may be with very brief, premonitory symptoms, placed in urgent peril of his life. The respiration is impeded; laborious and convulsive inspiratory and expiratory efforts are attended with a loud, harsh, grating or sibilant noise, and with the greatest distress. This distress is further increased by violent coughing, in which all impediments to breathing are still further augmented by the spasmodic action of the muscles of the larynx.

Here, the author states, every symptom points to the rima glottidis as the seat of those morbid processes by which life is placed in jeopardy, and by which, if not speedily arrested, life is surely extinguished in a few hours. After death, the lesion in these fatally rapid cases is found, as indicated during life, within the limits of the larynx, and chiefly on the glottis, which is found swollen, and covered with tenacious mucous or fibrinous exudation. Such are, for the most part, the pathological appearances observed in death from sudden, or rapidly fatal attacks of croup. When the premonitory symptoms of *catarrhal tracheitis* have preceded, as is fortunately the case in the majority of instances, the phenomena of inflammation will be met with also in the mucous membrane of that tube; but in the former instances the trachea is free from these morbid changes, and in the latter these are secondary. The existence or non-existence of the premonitory tracheitis, with the degree of rapidity which marks the course of the disease, and the greater or less urgency of the spasms, are the differences on which the various divisions of the disease have been based. But in all these cases, and under all these minor variations, the *extension of the inflammatory appearances beyond the larynx form the exception*, and not the rule, as is stated by many of the authors from whom the writer has quoted.

2. The second proposition refers to laryngismus only so far as it is distantly related to croup by its spasmodic character. Spasm has already been mentioned as constituting a most important element of croup; and it is owing to this feature that laryngismus, an entirely spasmodic disease, has been mistaken for it. There is little doubt, he thinks, but that, in the statistical report of the registrar-general, a large number of deaths reported from croup have occurred, in truth, from laryngismus. If further countenance were required for this opinion, it might be found in the names applied by some writers to spasm of the glottis—e. g., "false croup," "cerebral croup," and "spasmodic croup"—names the most inappropriate, inasmuch as it has no single feature in common with croup, beyond that it is a spasmodic disease. This very feature, however, should serve as diagnostic, since in laryngismus the dyspnœa and crowing sound accompanies inspiration only, while the harsh, rough, sawing noises and dyspnœa of croup attend both inspiration and expiration. Laryngismus is not accompanied by cough or febrile symptoms, which are an invariable accompaniment of croup. In short, the manner and duration of the paroxysm altogether differ in the two diseases.

3. *Pure laryngitis*, uncomplicated with croup or other affections of the air-passages, is undoubtedly a rare disease in childhood. The author is therefore inclined to attribute many of the deaths reported by the registrar-general, under fifteen years of age, as from *laryngitis*,

to *tracheitis* or *croup*, or laryngismus. That laryngitis does sometimes occur as a complication of eruptive fevers, is known to every practitioner. The pathological lesions found in this form of disease have many features in common with those of croup, but the spasmodic element is wanting; and the exudation of plastic lymph on the cordæ vocales is not met with to the same extent, nor is it so rapidly effused.

4. *Tracheitis* is the form of inflammation of the air-tubes which the writer believes has most frequently been miscalled *croup*. It is a common affection in children, and to it must be referred the symptoms which by most authors are assigned to certain modifications of croup. There occur daily a large number of cases which are wrongly designated *croup*, but to which the name *croupy cough*, or tracheitis, is alone appropriate.

The symptoms are usually catarrhal for a period varying from a few hours to several days before the peculiar croupy sound is heard. This symptom is often overlooked, however, at the first; and it is not uncommon to hear children with a loud, harsh, croupy cough entirely unheeded. The parents or friends (sometimes even medical) will urge, in answer to your warning that the case may possibly become converted into one of fatally rapid croup, that it is "only a cold," "that the child has often had it," or that "it has lasted several days, and will soon pass off."

In tracheitis, the hoarse, harsh sound which is known as *croupy cough* is very distinct from the characteristic spasmodic dyspnœa and coughing which accompany croup. The distinct croupy *respiration* is rarely present, and when heard, is dependent only on a slight extension of the inflammatory congestion from the trachea; but, at the same time, it must not be forgotten that this swollen or œdematous state of the glottis thus induced may, at very short notice, become acute and urgent *true croup*. Until, however, that degree of extension takes place, the two diseases are distinct, and often remain so for many weeks. As simple tracheitis, the inflammation is unattended with immediate hazard to life; but the patient, as before observed, is not safe from *croup*, and hence the importance of the diagnosis.

The writer considers that the preceding examination of the pathology and semeiology of croup, laryngismus, laryngitis, and tracheitis, has been sufficiently close for the purpose of his observations, which has been to point out more closely the *diagnosis* of croup. In the course of these remarks, the varieties, divisions, and subdivisions of systematic authors have been passed over, as explained by the distinctions which the writer has endeavoured to show to exist between diseases really different, but which, having been regarded as identical, it has been needful to divide and subdivide with a refinement not met with at the bedside.

It is not the object of the present communication to embrace the consideration of other points in the history of croup, as its causes, progress, complications, prognosis, treatment, &c. It therefore terminates with the following conclusions:

1. True croup consists in inflammation of the larynx, with spasmodic action of its muscles.

2. This inflammation may terminate fatally, by obstruction to

respiration, either from spasm of the muscles, tumefaction of the mucous membrane of the glottis, or from the deposition of plastic lymph on that membrane.

3. True croup is distinct from tracheitis, with which, however, it may be complicated, or from an extension of which it may arise, and with which it is generally confounded.

4. Croup is readily distinguishable from laryngismus, hooping-cough, or any other purely spasmodic affection of the respiratory organs.

5. Croup is distinct from simple laryngitis.

6. Tracheitis, or croupy cough, is distinct from croup, for which, however, it is often mistaken.

7. Tracheitis is often converted into croup by extension of the inflammation.

8. The definitions of most authors fail to point out the pathognomonic characters of *croup;* and hence much confusion has been introduced into the history and classification of this and allied diseases.

Art. 94.—*On Bloodletting in the Pneumonia of Children.* By Dr. Mauthner.

(*Oester. Medicinische Wochenschrift*, 1848, and *Edinburgh Monthly Journal*, Feb. 1850.)

[In transcribing the following observations of a physician deservedly celebrated for his acquaintance with the diseases of children, we do not wish to be understood as sanctioning the practice of general depletion. We, however, think that there is in the present day too great a tendency to decry the effect of loss of blood in the inflammatory diseases of children, and that in pneumonia especially, the greatest benefit is to be derived from judicious detraction of blood by leeches. It is in *lobar* pneumonia only that Mauthner advises venesection.]

Its prominent symptoms are,—difficult breathing, with oppression at the chest, short sharp cough (a symptom which, in the severe forms of the disease, is at first wanting), heat of surface, fever, head affections, and sometimes vomiting.

Over the seat of the disease, which is usually the back of the right lung, the percussion sound becomes dull; and on auscultation, in the early state, fine dry crepitation is audible; afterwards bronchial respiration. The child usually lies on the right side; and if it can speak, complains of pain in the chest; the pulse is small, hard, and frequent; the secretions and excretions are diminished in quantity. These severe attacks are most common in children above a year old, but infants are not exempt from them.

The anatomical characters of the *first* stage consist in extensive injection (stasis) of the pulmonary parenchyma; of the *second*, in alteration of structure, with effusion of plastic exudation in the form of red hepatization; of the *third* (the so-called suppurative stage), in effusion of pus, sometimes diffused throughout the parenchyma, more rarely in children constituting true abscess.

In the cases treated during the first stage, Mauthner has obtained the very best effects from bloodletting. He has often bled the little

patients who have been brought for his advice to the hospital, permitted them to be carried home, and been subsequently astonished to find how completely this single remedy had obviated the urgent symptoms. On the other hand, he has too often seen the bad effects of neglecting this heroic remedy at the outset of the inflammation. In using the lancet, regard must be had to the age and constitution of the patient, and to the intensity of the disease. The depletion should not stop till the child turns pale, becomes sick, vomits, or seems exhausted. When the operation is properly performed, Mauthner thinks all other remedies, such as leeches, cataplasms, and internal physic, may be dispensed with, and in a few days the child is well.

In cases in which the disease has reached its *second* stage, the immediate effect of venesection is not so remarkable; but some benefit is usually speedily experienced, and within three days the bronchial respiration ceases, and the morbid process is removed, usually upon the appearance of some critical evacuation from the skin or kidneys.

Even when there was reason to suspect suppuration, Mauthner has often let blood, after mature deliberation, and has had no occasion to repent the adoption of the practice. Thus he believes that he succeeded in saving a boy six years of age, who, after a neglected pneumonia of three weeks' standing, fell under his care, suffering from hectic fever, emaciation, and purulent expectoration. After in vain attempting a cure with digitalis and acetat. plumbi, Mauthner ordered venesection, and the boy recovered. Where, however, as is often the case, an unresolved pneumonia seems to have gone on to tuberculosis, bleeding can do no good.

The indications for venesection are derived, *first*, from an accurate physical exploration of the chest. It must, however, be noted, that when the cough and general symptoms indicate the existence of pneumonia, the absence of physical signs does not justify the neglect of proper remedies. For even when extensive congestion of the pulmonary tissue is present, if a certain quantity of air be still included in its interstices, the percussion sound and respiratory murmur may not be sensibly affected. Besides, the inflammation may be situated in a part of the lung which cannot be satisfactorily explored; or the child may be so restless and timid as to render the use of the stethoscope impossible.

The *second* indication is derived from the age and individual constitution of the child. Strong plump children above a year old may be bled without scruple; those who are delicate will still bear depletion, if it be ascertained that their previous health has been good; even infants under one year of age, labouring under severe pneumonia, suffer less from venesection than from the application of three or four leeches.

The stage of the disease affords the *third* indication. In the congestive period the remedy is sure. When hepatization has taken place, bleeding is not hurtful; but when suppuration ensues, it requires caution.

The amount of blood to be drawn must be regulated by the age. In infants, a single ounce may be sufficient.

Art. 95.—*Mucous Pneumonia, or Suffocative Catarrh of Infants.*—Dr. Duclos, in the 'Bulletin de Thérapeutique,' has given the name of mucous pneumonia to an inflammation of the parenchyma of the lungs in very young children, which differs from the usual type of pneumonia by its mode of production, anatomical characters, and symptoms. Instead of occurring at once, as pneumonia often does with young children, it follows upon, and seems to be an extension of, a catarrhal phlegmasia. It has likewise been observed to attack children during dentition. In ordinary pneumonia, there is generally a sub-crepitant râle when the inflammation is lobular, or sonorous râles when a whole lobe is involved. In the mucous pneumonia, however, as the inflammation does not extend to the whole lobe, there is no sonorous râle, and as the bronchial secretion is extremely abundant, mucous rhonchi entirely mask the sub-crepitating râles. But both varieties present a certain amount of oppression, violent movements of the alæ nasi, and a peculiar furrow at the base of the chest, along the insertions of the diaphragm, which is so characteristic that Dr. Trousseau has given it the name of "peri-pneumonic furrow," and lastly, fever. Post-mortem examinations, after fatal cases of mucous pneumonia, have disclosed the existence of the various alterations which characterise pneumonia, besides those of ordinary catarrh. This affection is very dangerous, and medical men find themselves strangely mistaken when, after a mild catarrh, which they pronounced trifling, the mucous pneumonia attacks the little patient. The mucous secretion then becomes more and more abundant, it cannot be got rid of, and the child dies. Dr. Duclos thinks that the treatment ought to differ from the one usually adopted in common pneumonia, on account of the rapid progress of the disease when inflammation has set in, and the large amount of mucous secretion which takes place. He sums up the means to be employed in the following manner:—emetics chiefly with antimonials, simultaneously cutaneous revulsion on the chest and legs.

Art. 96.—*New method of treating Hooping-cough.* By Dr. Eben. Watson.

(*Dublin Medical Press*, Feb. 1850.)

[The author, before proceeding to mention his method of treating hooping-cough, alludes to the prevailing theories of the disease; he observes:]

There are four different views of the nature of the hooping-cough, each of which has had its advocates. According to one, it depends on inflammation of the brain and its membranes, from which the inflammation extends to the respiratory surfaces; while another class of pathologists maintain exactly the opposite—viz., that the inflammation originates in the bronchial membrane, and extends rapidly to the brain and medulla oblongata. A third theory is, that, while the brain and medulla may be unaffected, the essence of the malady lies in a peculiar irritation of the trunks of the great nerves supplying the larynx,

diaphragm, and stomach—viz., the pneumogastric and phrenic—without any bronchial inflammation necessarily existing at all. And the fourth theory is, that the poison of the hooping-cough first causes inflammation of the respiratory surfaces, and very speedily affects the nerves, so as to render the glottis peculiarly irritable.

This last-mentioned theory is substantially the one which I adopt, as being the simplest, and nearest to the truth. I believe that in a case of uncomplicated hooping-cough the morbid poison first inflames the mucous membrane lining the pharynx and upper part of the larynx; that there the extreme branches of the sensory nerve, the superior laryngeal, become affected in some peculiar way which I shall not attempt to explain; and that finally the motor nerve, the recurrent laryngeal, is excited into reflex action. Hence the ordinary progress of the symptoms, which first resemble those of a common cold, or slight bronchitis—differing, however, from the latter in the absence of any constitutional or stethoscopic indications of inflamed bronchi, as well as in the periodic character of the cough. Along with this symptom may also be ranked certain peculiar pains of the throat and neck, which are often complained of, and seem to indicate the effect of the poison on the sensory nerve of these parts. Then follows the distinctive symptom of the affection—viz., the whoop, or drawback—which is produced by the excitement of the inferior laryngeal nerve, and consequent spasm of the muscles of the glottis. Such are the symptoms which, in my opinion, are alone essential to the hooping-cough. Few cases of that disease, however, proceed far on their course without the occurrence of another symptom—viz., vomiting—during or towards the end of the paroxysms of coughing; which is doubtless caused by an extension of the morbid influence to the branches of the pneumogastric supplying the stomach.

[Viewing the disease, then, as essentially an inflammation of the pharyngo-laryngeal mucous membrane, with peculiar irritability of the glottis, it occurred to Dr. Watson, that an efficient remedy might be found in cauterization of the larynx, according to the plan of Dr. Horace Green. (See H.-Y. A. vol. vi, p. 223.) He accordingly put it in practice in the following cases.]

"The first case in which I attempted it was that of a weakly boy, about eight years old, in whom the disease was already at its height. He had a severe paroxysm of coughing regularly every quarter of an hour; he was already much debilitated, and in constant danger of having some serious lesion produced in his delicate lungs. From the first time that I applied the solution to the glottis, the severity of the cough was mitigated, and, after repeating the application every second day for about a week, he was found not to whoop at all. The boy then made a speedy and complete recovery of his ordinary strength, under the use of the cod-liver oil.

"The sister of this patient was also seriously affected by the same disease, and the application of a solution of caustic was likewise used in her case. But its effects were not so striking as in the other case, owing to the presence of lobular pneumonia of the posterior part of the left lung. Nevertheless, the paroxysms of the hooping-cough diminished in frequency and in violence under its use; and after the

pneumonia had been subdued by pretty active measures, the child ultimately made a good recovery.

"My third case was that of a boy, about six years of age, in whom the disease had nearly passed without much treatment of any kind having been employed; but he still was harassed with frequent and pretty violent fits of coughing; and when excited or frightened, he still had that mode of drawing in his breath, popularly known as 'the drawback.' Two or three applications of the solution to the glottis and larynx of this child were sufficient to accomplish a perfect cure of his symptoms; and a short sojourn in the country, with the use of a tonic, completed his restoration to health and vigour."

Dr. Watson has since treated, in a similar manner, several other cases of hooping-cough, the results of which are equally favorable with those already mentioned. None of his patients continued to whoop more than eight or ten days after the solution of caustic began to be applied to the glottis; and from the first of such applications, the mitigation of the symptoms was very marked. In some cases of children living in the same house with patients affected with hooping-cough, and who exhibited symptoms of the commencement of that disease, such as frequent fits of coughing, especially during the night, and when suddenly agitated, with absence of coexisting fever, and of the physical signs of bronchitis, &c., he has, by applying the solution of caustic to their larynges, succeeded in dissipating the symptoms alluded to, and restoring the children to health.

The strength of the solution is gr. xv to the ounce, applied every second day by means of whalebone tipped with sponge, at first to the pharynx only. The mode of doing this is essentially the same as by Dr. Horace Green, and need not be repeated.]

Art. 97.—*Treatment of Hooping-cough.*—Dr. Durr, in the *Medècinische Correspondenz Blatt*, speaks of the beneficial action of tannin and benzoin in the latter stages of hooping-cough. He prepares powders, each containing from two to five centigrammes of each, with fifty centigrammes of sugar. This is given every two hours.

Prov. Med. and Surg. Journal, April 3.

REPORTS

ON THE

PROGRESS OF THE MEDICAL SCIENCES.

January—June 1850.

The intention of the following Reports is to pass in review the principal additions to each department of Medical Science, which have been placed on record during the preceding six months. It is not contemplated that they should be confined exclusively to the notice of what is new; any fact or doctrine which may be considered practically useful, will, although not strictly novel, be regarded as worthy of commemoration. It must be obvious to all who are aware of the immense mass of information which is almost daily put forth by the medical press of this and other countries, that the notice of every subject would be an impossibility. It therefore devolves upon the writers of each Report, to select only such articles for retrospection as may possess superior recommendations, either of an intrinsic character, or in relation to the main end and aim of all medical knowledge—the alleviation of suffering and disease.

I.

REPORT ON THE PROGRESS OF PRACTICAL MEDICINE, PATHOLOGY, AND THERAPEUTICS.

BY THE EDITOR.

PART I.—GENERAL PATHOLOGY.

When we last addressed ourselves to our semestrial task of chronicling the progress of those departments of medical science which we have been in the habit of embracing in the present Report, this country, in common with many others, was suffering under the scourge of pestilential cholera, and, as was natural, the periodical literature from which we chiefly derive our materials, was mainly occupied with that still mysterious malady. By the dispensation of a merciful Providence the plague is stayed; and with it has ceased, in a great measure, the many communications which its presence elicited. In the following Report we shall not therefore devote any space to the consideration of this malady, but shall return to the regular course which we had previously adopted.

§ I.—*Exudation; its Pathology and Treatment.*

This is the title of a comprehensive Essay, by Dr. Hughes Bennett, in which we have a minute and explicit account of the varieties of exudation, upon which, as he observes, depend the majority of the diseases which we are called upon to treat. The varieties alluded to are—the simple, the cancerous, and the tubercular exudation. Dr. Bennett gives a brief explanation of the term "exudation," and then proceeds to describe—

1. *The Early Phenomena of Exudation.*—The changes which are associated with this process are stated to be:—1. Narrowing of the capillaries, with acceleration of blood current. 2. Dilatation of these vessels and retardation of the current. 3. Irregularity in the currents. 4. Stagnation of the blood. 5. Liquor sanguinis permeates the coats of the vessels. These various processes are well seen in the circulation of the frog's foot.

2. *Theory of Exudation.*—The first step in the process, Dr. Bennett observes, is explicable on the supposition that the capillaries are endowed with muscular fibres; the narrowing of their caliber is due to the contraction of these, the dilatation to their subsequent relaxation.

The rapid and slow movement of the blood is accounted for on the hydraulic principle that when a certain quantity of fluid is propelled through a tube, its velocity alters, the propelling force being the same, according as the tube is narrowed or widened. The stoppage of the blood, and the exudation of liquor sanguinus, he considers more difficult of explanation. The theory advanced by some, that it is due to the formation of large numbers of colourless corpuscles,

and their adherence to the sides of the vessels, he does not consider tenable. His own conviction is, that the phenomenon is due to some change not in the blood or in the vessels, but in the extra-vascular tissues; a modification, perhaps, of the force which, in the physiological condition, attracts nutritive materials from the blood.

3. *Results of Exudation.*—The series of phenomena which follow upon the act of exudation, are regulated materially by the physical qualities of the liquor sanguinis. This varies under certain conditions of system, to which the term diathesis is given, and it accordingly becomes necessary to consider exudation in its simple form, and as it occurs under the two leading diatheses, the cancerous, and the tubercular.

I. *Simple* Exudation, according to Dr. Bennett, presents four forms :—1. As it occurs on serous membranes, in which it has a tendency to fibrillate. 2. As it occurs on mucous membranes, with a tendency to conversion into pus globules. 3. As it occurs in parenchymatous structures, when it is granular. 4. As it is seen in wounds and sores. Dr. Bennett describes each of these varieties at length, and illustrates them by several woodcuts, for which we must refer to the original.

II. *Cancerous* Exudation presents three principal forms, which are dependent on the relative amount and arrangement of the cells and fibres formed in it. 1. The structure is very hard, and is principally formed of fibres (*scirrhus*). 2. The structure is soft, containing a copious milky fluid, in which numerous corpuscles swim (*encephaloma*). 3. The structure has a fibrous basis, so arranged as to form areolæ or loculi, containing a gelatinous gum or glue-like matter (*colloid cancer*).

1. *Scirrhus* presents to the naked eye a whitish or slightly yellowish tinge; is dense and hard to the feel, and offers considerable resistance to, and often crunches under the knife. On making a thin section of the growth, it is seen to be principally composed of filaments, which vary in size, and run in different directions, sometimes forming waved bands, at others an inextricable plexus, among which, however, nucleated cells may be seen to be infiltrated. Occasionally the fibrous structure forms loculi or cysts, enclosing similar cells. The so-called *cancer-cells* may be round, oval, caudate, spindle-shaped, oblong, square, heart-shaped, or of various indescribable forms, from pressure on their sides. In size they may vary from the $\frac{1}{100}$th to the $\frac{1}{10}$th of a millimetre in diameter. The cell-wall, when young, is smooth and distended; when old, it is more or less corrugated and flaccid. Each cell contains at least one nucleus, often two, and sometimes they increase in number from three to nine. Most commonly there is only one, which is round or oval, generally the latter, and contains one or two granules or nucleoli. The nucleus, like the cell itself, varies in size, and may occupy from one sixth to four fifths of its volume; between the nucleus and cell-wall there is a colourless fluid, which, at first transparent, becomes afterwards opalescent, from the presence of molecules and granules. On the addition of water, the cell-wall becomes distended by endosmosis, and is enlarged. When acetic acid is added, the cell-wall is rendered more transparent, and in young cells is entirely dissolved, whilst the nucleus, on the other hand, either remains unaffected, or its margin becomes thicker, and its substance more or less contracted.

2. *Encephaloma* also presents a fibrous texture, which, however, is very loose when compared with that of scirrhus. In the denser parts of the growth, indeed, it closely resembles that form of cancer; but where it is pulpy and broken down, often no traces of fibres, or at most some fragments of them are visible.

The whitish cut surface is often more or less mottled, with a grayish-pinkish, reddish, yellowish, or black colour. The first two are owing to different degrees of vascularity. The reddish spots are owing to extravasations of blood, of greater or less extent; and these, when very large, constitute what has been called by some surgeons *fungus hæmatodes*. The yellowish colour, when it surrounds bloody extravasations, is owing to imbibition of their colouring matter; but when reticulated over the surface, or collected in masses, it is generally dependent on fatty degeneration of the cancerous tissue, and forms the so-called reticulum (*cancer reticulare of Müller*). The yellow matter is usually of cheese-like consistence, friable, and often resembles tubercle, for which it has been mistaken. The blackish tinge is owing to black pigment which may be infiltrated among the cancerous elements, and exist within the cells, constituting the malignant melanosis, or melanic cancer, of authors.

3. *Colloid cancer* consists of a fibrous structure so arranged as to form areolæ or loculi, which are filled with a grey or amber coloured glutinous matter, sometimes transparent, at others opalescent or semi-opaque. This matter is occasionally found quite structureless, or exhibits only a finely molecular appearance. Under these circumstances the term *colloid tissue* has been applied to it. At other times numerous nucleated cells, presenting all the characters of cancer cells, in various stages of development, are found in it as a blastema; and we observe that the growth has a tendency to spread. This is colloid cancer, which, when it is formed on a free surface, as on the peritoneum, often presents small grains of a grey colour, resembling coagulated gum-arabic. When collected in masses, these have an irregular nodulated aspect.

III. *Tubercular* Exudation has been spoken of as presenting a miliary infiltrated or encysted form; but these distinctions have no reference to structure, but merely to the extent and age of the exudation. On section, when tough, it presents a smooth or waxy, and when soft, a slightly granular surface. On pressure it is friable, and may break down into a pulpy matter, but never yields a milky juice.

A small portion squeezed between glasses, and examined under the microscope, presents a number of irregular shaped bodies approaching a round, oval, or triangular form, varying in their longest diameters from the $\frac{1}{120}$th to $\frac{1}{75}$th of a millimetre. These bodies contain from one to seven granules, are unaffected by water, but rendered very transparent by acetic acid. They are what have been called tubercle corpuscles. They are always mingled with a multitude of molecules and granules, which are more numerous as the tubercle is more soft. Occasionally, when softened tubercle resembles pus, constituting scrofulous purulent matter, we find the corpuscles more rounded, and approaching the character of pus cells. They do not, however, on the addition of acetic acid, exhibit the peculiar granular nuclei of these bodies.

The gray granulations described by Bayle may be seen on careful management of the light, after the addition of acetic acid, to contain similar bodies to those described as tubercle corpuscles, closely aggregated together, with their edges indistinct, and containing few granules.

Cretaceous and calcareous tubercles, on the other hand, contain very few of these bodies, their substance being principally made up of numerous irregular masses of phosphate of lime, and a greater or less number of crystals of cholesterine.

4. *Pathology of the Three Kinds of Exudation.*—We have seen that the liquor sanguinis transudes through the coats of the capillaries, and, coagulating

outside the vessels, constitutes an exudation more or less solid. Much of the serum which accompanied it is rapidly absorbed, but what remains constitutes a blastema, which becomes, as has been described, organized in various ways, according to the seat of the exuded material. Dr. Bennett sums up the most important characters of the three kinds of exudation, as follows :

" We observe in a simple or inflammatory exudation, that it may occur at all epochs in life; that it may attack all tissues, and most commonly those which are very vascular; that it may be poured out in large or small quantities; and that it may occur with greater or less rapidity—hence the terms acute and chronic. We further observe, that the acute exudations are generally attended with symptoms of a peculiar character (inflammatory), and have a great tendency to cell or temporary formations, which rapidly break down, are absorbed and excreted by the emunctories: that the chronic exudations, on the other hand, have a tendency to fibrous or permanent formations, producing adhesions, strictures, hypertrophies, &c.

" We observe, in a cancerous exudation, that it occurs for the most part in persons of adult or advanced life: that it may also occur in every tissue, but is by far most common in glandular or fatty organs, such as the liver or female mamma, and is very apt to attack the lymphatic glands *secondarily;* that its progress, although sometimes slow when very fibrous, becomes rapid when corpuscles abound in it; that there is a great tendency to the formation of the most perfect forms of cell life, which have the power of self-development, and thereby of spreading to neighbouring tissues; and lastly, that when, by pressure, ulceration is produced on free surfaces, it bursts through these in exuberant fungoid excrescences.

" We observe, in a tubercular exudation, that it occurs for the most part in young subjects, between the periods of dentition and of adult age; that it may also occur in all tissues, but is by far most common *primarily* in the lymphatic glands, and afterwards in fibrous or albuminous textures, as the lungs and serous surfaces; that its progress is generally exceedingly slow; that there is no disposition to the formation of perfect cell-formation, but rather to abortive corpuscles, which form slowly, and slowly break down; that there is little tendency to absorption, but great liability to disintegration and ulceration; and finally, that the local changes are almost always preceded by derangement of the primæ viæ, and a group of symptoms known under the name of dyspepsia.

" Taking, then, the products of simple inflammation (say pus) as a standard, we cannot fail to remark, that whilst the cell development of tubercle is below, that of cancer is above this standard. Of the three kinds of exudation, tubercle is the lowest, and cancer the highest, in the scale."

On what the difference in the developmental power of the exudation depends, the author does not profess to say; but he is inclined to the belief that it is due to some inherent property in the matter itself. This, as he observes, is generally admitted, pathologists tracing variety of exudation to variety in composition of the blood; but here they stop, forgetting, apparently, that there must be a cause for the difference in the blood, and that this cause requires elucidation.

The solution of the question Dr. Bennett thus attempts. He says that numerous facts " render it probable that while the blood is normal in simple exudation, it contains an excess of nutritive materials, in cancerous, and a deficiency of them in tubercular exudation."

5. *Treatment of Exudation.*—The indications of treatment mentioned by Dr. Bennett are three—1, to prevent or diminish exudation; 2, to assist its removal when deposited; 3, when this cannot be accomplished, to render it

as innocuous as possible. The manner of accomplishing this is laid down in the following words:

"1. To prevent or diminish the extent of an exudation, we must adopt measures to overcome the dilatation of the capillaries, their distension with blood, and the attractive power (whatever that is) which draws the liquor sanguinis into the surrounding textures. This is accomplished—1st. By topical applications of cold and astringents, which stimulate the capillaries to contraction. 2d. By topical bloodletting, which, by drawing blood from the neighbourhood of the part, favours the onward flow of blood through the obstructed capillaries. 3d. By general bloodletting, which, by diminishing the quantity of blood in the system, is supposed to act indirectly in the same manner, as well as in favouring absorption of the exudation before it becomes organized. 4th. Soothing topical applications, such as warm fomentations, opiates, &c., which relieve the irritability of the nerves in the part, on which, hypothetically, the attractive force in the textures is supposed to depend. The indications for employing one or the other of these means, I shall discuss under the head of special cases.

"2. When the exudation has coagulated, it constitutes a foreign body, which can only be removed by its becoming organized, or by its dying. In the one case it acts as a blastema, in which structures are developed that ultimately break it down, and render it capable of being absorbed, or converted into a tissue that becomes permanent. In the other case, it disintegrates slowly, constituting ulceration, or putrefies, forming gangrene, when it is separated from the economy in discharge or as a slough. It is by regulating the formative power of the exudation that we check or favour resolution; and we can only do this by employing those means which lessen or advance growth in all living organisms. Thus, locally, cold checks, and heat favours, growth; and we further observe that moisture, room for expansion, and locality, exercise considerable influence. Hence lotions favour, and pressure checks, organic development.

"With a view of diminishing the general excitement that prevails, tartar emetic has been recommended, and to assist the absorption of the exuded matter, calomel is a favorite remedy; but the manner in which these act has been disputed, and whether it be by producing an influence on the nervous system, as a solvent of the effete matters in the blood, or by stimulating the excretions, is yet undetermined. In the same way the action of counter-irritants, although undoubtedly useful in causing absorption of chronic exudations, is little understood, and belongs to the most mysterious department of therapeutics.

"3. In order to favour the excretions of the effete matters in the blood, purgatives, diaphoretics, and diuretics, alone or combined, will be found very useful. The influence of these remedies, indeed, is not confined merely to removing matters which have been absorbed as the result of the secondary digestion; but, by their depurating qualities, they favour indirectly the rapid absorption of the exudation.

"4. In tubercular exudation, the organization of which is imperfect, and leads to ulceration and wasting, we have to combat the preliminary phenomena of exudation locally, whilst we improve the nutritive powers of the economy generally. To meet the first indication, counter-irritation and an equable climate are useful; whilst for the second, we must overcome the dyspepsia so hostile to a correct primary digestion, and supply the system with easily assimilable animal oils, without which nutrition cannot proceed.

"5. In cancerous exudations we must endeavour to restrain the advance of growth, by cold, dryness, and pressure; attempt its eradication by incision, if

this can be appropriately practised; and diminish the tendency to accumulation of nutritive materials in the system, by keeping the excretory functions in full activity.*

§ II.—*Zymotic Diseases.*

2. Fever. *Identity of Typhus and Typhoid.*—In vol. ix. p. 227, we have given some account of the commencement of a most elaborate series of essays on the above subject, by Dr. Jenner. It was our intention to have followed him through each paper in succession, but the series has proved so much more lengthened than we anticipated, that it appeared to us more in unison with the scope and intentions of these Reports, to defer further notice of them until we should be able, by their completion, to give a *résumé* of the entire subject. Their completion, together with a paper subsequently read before the Medico-Chirurgical Society (December 11, 1849), enables us to record the author's convictions, that as regards their course, symptoms, and lesions, no two diseases can be more distinct than typhus and typhoid fever. That they have also a distinct exciting cause he also believes, and to prove this is the main object of the paper alluded to. In this communication he first describes the peculiarities of the course and symptoms of relapsing fever, and of the skin eruption of typhoid fever and of that of typhus fever, on which the diagnosis of these diseases rests. He then gives three tables, showing all the instances in which two or more cases of fever were admitted from one house into the London Fever Hospital in the years 1847, 1848, and 1849; the age, sex, and degree of intimacy of the individuals, as well as the nature of the disease under which they laboured; and for the years 1848 and 1849, the number of all cases of fever admitted into the Fever Hospital during the separate months, with the rash of typhoid fever and that of typhus fever respectively. The results exhibited in these tables are:—1st. That, in 1847, there were five instances of the admission of two or more cases of typhus fever from the same house, two instances of the admission of two cases of typhoid fever from the same house, and five instances of the admission of two cases of relapsing fever from the same house, and not a single instance of cases of the three diseases, or even of two of them, coming from the same locality. 2d. That, in 1848, two or more cases of typhus fever were admitted from each of thirty-three houses, and two cases of typhoid fever from each of four houses; while there was only one instance of a case of typhus and one of typhoid fever being admitted from one house; and in this exceptional instance there is reason to believe the patients received their diseases from different sources. 3d. That, in 1849, two or more cases of typhus fever were admitted from each of eighteen separate localities; and two or more cases of typhoid fever from each of four localities; while in not a single instance was a case of typhoid fever and a case of typhus fever admitted from the same house. 4th. That, in 1847, the relapsing fever, typhoid fever, and typhus fever, and, in 1848 and 1849, the typhus and typhoid fevers, prevailed simultaneously in the metropolis; and, nevertheless, that the cases of these several diseases came to the hospital from distinct localities. In 1848, there were received into the fever hospital 118 cases of fever with the rash of typhoid fever, and 390 with the rash of typhus fever; in 1849, 118 with the rash of typhoid fever, and 143 with the rash of typhus fever. As, therefore, about one fourth of all the cases of fever admitted in 1848, and nearly half of those admitted in 1849, were cases of typhoid fever,

* Edinburgh Monthly Journal, April 1850.

the author argues that, in the numerous instances in which two or more cases were admitted from one locality, cases of typhoid fever ought to have been mingled indifferently with cases of typhus fever, in about their proportion in the two years, if the cause of the two diseases were identical; while, as has been shown, from all the localities which yielded cases of typhus, there came but one case of typhoid fever. He remarks, moreover, that an increase of the epidemic prevalence of one of these kinds of fevers had no influence in increasing or diminishing the absolute number of cases of the other kind of fever; that no transition-cases were observed, marking the passage of one epidemic constitution into another; that the rash of typhoid fever and that of typhus fever were not modified in their characters by variations in the prevalence of other kinds of fever; and that the absence or presence of lesion of Peyer's patches and the mesenteric glands always corresponded with the symptoms of the particular cases during life, and did not depend on the epidemic constitution. The author then adduces some particular instances, in which a succession of cases, coming from the same locality, or apparently arising from the same cause, all presented the same characters. And, in conclusion, he remarks that the facts contained in this paper appear to him to prove, incontestably, that the specific causes of typhus and typhoid fevers are absolutely different from each other; and to render it in the highest degree probable that the specific cause of relapsing fever is different from that of either of the two former.

The epidemic of typhoid fever in the city of Bath, has been described by Dr. Davies, whose former writings on fever we have had occasion to notice in a preceding volume (V, p. 1). The present communication is chiefly interesting as exhibiting the occurrence of true typhoid fever, a disease which, though familiar to continental practitioners, is, compared with typhus, of unfrequent occurrence in this country. The treatment followed in this epidemic was that of local depletion by leeches to the iliac regions every day for two or three days, if the patient was seen early; sinapisms being substituted if the treatment was not commenced till the second week of the disease. The patient was frequently sponged with tepid water. When diarrhœa existed, which was the general rule, three grains of grey powder and five grains of Dover's powder were given night and morning, followed, every third or fourth day, by small doses of castor oil. If active delirium existed, it was treated by antimony and opium, on Grave's plan. Stimulants were given when the failure of the circulation indicated the necessity for them.*

3. *Fever Hospitals.*—A question of paramount importance, in reference to fever, has been discussed by Dr. Christison, in an admirable clinical lecture recently delivered by him. The question is as to the propriety of accumulating fever patients in a separate ward or hospital. On this point opinion is much divided, but Dr. Christison has adduced evidence on the subject which must, we think, be instrumental in deciding upon the impropriety and danger of such establishments. He informs us, that in thirty-two years' experience of fever in Edinburgh it has been ascertained that in fever wards all the attendants contract the disease, sooner or later, and that the mortality has been great, not only among those constantly exposed, as nurses, porters, and house surgeons, but also among the more casual visitors, as the physicians. On the other hand, in private domiciles, fever seldom spreads; in fact, Dr. Christison remarks, that though he has attended upwards of one hundred medical students who had caught fever in the fever wards, he has never known an instance of its spreading in their lodgings. Such testimony is

* Prov. Med. and Surg. Journal, Feb. 6, 1850.

amply borne out by Drs. Bright, Williams, and Latham, all of whom consider that a few fever patients can without danger be admitted into general wards, while the accumulation of cases in a separate ward cannot be made without danger to all who come into contact with them.*

4. *Primary action of Fever Poison.*—Mr. Todd, in the interesting essays published by him in the 'Lancet,' argues at some length that the first impression of fever poison is upon the nervous system, and that the changes in the blood, which cannot be denied, are secondary, or at least contemporaneous. He supports this theory by reference to the more virulent tropical fevers, in which the first assault of the poison is well known in some cases to produce speedy collapse and death, before there has been time for chemical or vital blood changes to take place.† [The question is an open one, and we do not conceive that Mr. Todd has by any means exhausted it. It is not contrary to reason that the poison may act under different circumstances or degrees of concentration, either on the nervous system first or upon the blood, precisely as in the case of certain poisons, which in one dose evidently act by absorption, but in a larger quantity produce death so speedily as to leave no doubt of their immediate action on the nerves.]

5. *Scarlatina.*—The most important publication connected with this disease which has appeared since our last report, is a work by Dr. Miller, entitled "Pathology of the Kidney in Scarlatina."‡ The object of the author is to demonstrate that those symptoms and lesions which have commonly been regarded as sequelæ of scarlatina are not so in fact, but are only another expression of the scarlatinous virus, which exhibits itself not only on the skin and mucous membranes, but also on the secreting structures of the kidney. This opinion, in which Dr. Miller is not singular, is ably supported by a well selected series of cases, as well as in the third chapter which contains a lucid exposé of the arguments by which this view of the pathology of scarlatinous dropsy may be sustained. The chapter on treatment of this form of dropsy will be found condensed in a former part of the present volume.

For the prevention of scarlatina, Dr. Webster relies upon sponging with tepid vinegar. He relates four instances in which the disease did not spread beyond the original patient; but as the other members of the several families were strictly precluded, the precise influence of the sponging in the prophylaxis cannot be readily ascertained. As a grateful and useful refrigerant, the value of the method cannot be doubted.§

The great diminution of the mortality from scarlatina which follows the early application of nitrate of silver to the fauces is corroborated by the testimony of Mr. Brown (Penn.), who states that previously to adopting this mode of treatment he lost half his cases, but subsequently, during the same epidemic, he lost scarcely one in fifty. The strength of the solution of nitrate of silver was ℈j to ℥j of water. This was applied in every case whether there was ulceration or not, and repeated once or twice a day till convalescence was established.‖

6. *Variola.—Ectrotic Treatment.*—Having at various times taken notice of the above modification in the routine treatment of smallpox, we have pleasure in adding confirmation of its value by so competent an observer as Dr. Hughes Bennett. The subjoined cases show the treatment alluded to:—

A female, æt. 27, admitted September 1848. The eruption was vesicular

* Edin. Monthly Journal, March 1850. † Lancet. ‡ Pathology of the Kidney in Scarlatina, with Cases, by James Miller, M.D. London, 1850. § Edin. Monthly Journal, Dec. 1849. ‖ Philadelphia Med. Examiner, Feb. 1850.

on the face, papular on the body. In addition to internal treatment, the face was anointed night and morning with the following ointment:—Unguent. hydr. fort. ℥j, pulv. amyli, ℥j. The disease went through its usual course, the eruption being confluent on the neck, but discrete on the extremities. The ointment formed a thick crust, which, as it cracked and peeled off, was renewed. It was observed that she never complained of the face. There was no swelling of the eyelids, and when the entire mask was allowed to separate from the skin, it was found to be perfectly smooth and natural in colour.

A second case is still more conclusive. A girl, æt. 19, six months pregnant. The face was covered with papulæ, with a few vesicles. The upper part of the chest was thickly covered, the extremities less so. The ointment was applied as in the preceding case. The maturation became complete over the whole body, and in the mucous membrane of the mouth and fauces. The pustules were confluent. She did not complain of any pain, nor was there any puffiness of the face. On the separation of the ointment the face was found to be free from mark, while the neck and shoulders were deeply pitted.

[We record these cases with great satisfaction, as they, to our minds, render the advantage of the abortive treatment very evident. We trust that it is a plan of treatment which will be extensively tested; indeed, after the testimony which has already been accumulated in its favour, we should regard its omission as culpable.]

§ III.—*Diseases of the Blood.*

7. *Anæmia:—Deficiency of Albumen.*—MM. Becquerel and Rodier, whose researches on the chemistry of the blood have been so clearly laid before the readers of the 'Abstract,' in Dr. Day's talented reports on pathological chemistry, have contributed an additional memoir, the object of which is to illustrate that condition of blood, by them termed anæmia, which consists in the diminution of the proportion of albumen, which condition they further declare to be the proximate cause of many cases of dropsy. Without following them through their whole essay, we may sufficiently answer our purpose by recapitulating the following conclusions:—

1. In addition to the ordinary form of anæmia, which consists in diminution of blood-globules, there is another which is characterised by a diminished proportion of albumen.
2. This condition of the blood is announced by pallor, debility, and specially by anasarca and albuminuria.
3. The same state may be produced slowly, and the same symptoms may then arise without the association of albuminous urine.
4. This is the explanation of a large proportion of essential dropsies.
5. The diminution in albumen is not necessarily combined with diminution in the globules, though they do frequently coexist.
6. Dropsy does not follow simple diminution of globules.
7. Other symptoms attendant on diminution of albumen are intermittent, arterial and cardiac, and persistent venous murmurs.
8. The causes of this condition are insufficient food and ventilation, losses of blood, diarrhœa, parudal miasmata, &c.*

8. *Anæmia, Influence of Rheumatism in producing.*—Dr. O'Ferrall believes that rheumatism has a tendency, in its latter stages, to produce phenomena connected with a diminution of the globules of the blood. Some modifica-

* Gazette Médicale, 15, 1850.

tions in the constitution of the blood during rheumatic fever have been already observed. It has been ascertained that, at an early period of the disease, the fibrin is increased; but it would appear that, subsequently, there is in many instances, a diminution of the colouring matter. The attention of Dr. O'Ferrall was first called to the subject by observing that, in cases with endocardiac complications, after the employment of depletion and mercury, a cardiac bruit, of a different character from that which originally presented itself, continued to persist, notwithstanding the steady employment of the usual means for subduing inflammatory action. By-and-by cases terminating fatally came under his observation, in which, although this bruit was present to the last, no morbid appearances could be detected in the heart, upon *post-mortem* examination. Afterwards he found that a râle musicale in the cervical vessels very constantly accompanied this peculiar cardiac bruit; and he was led to suspect that after the subjection of the inflammation by bleeding and mercury, an anæmic condition followed the use of these remedies, which would require a very different treatment for its subdual. He accordingly ordered chalybeates, as in an ordinary case of chlorosis, and found the cervical and cardiac bruits to disappear under the use of this remedy. As yet he imagined the anæmia to be due to the effects of the antiphlogistic treatment employed in combating inflammation; but during the last few years he has had repeated opportunities of observing, that a râle musicale in the neck, and a bruit accompanying the first sound over the aortic valves, very frequently coincide with the decline of rheumatic fever, in cases where no active and weakening remedies have been employed; and he has been thus led to the conclusion that the natural tendency of the disease in its advanced stages is to produce a diminution of the hæmatosin of the blood, evincing itself by its ordinary physical phenomena. This observation is one of great importance in practice, and teaches us the necessity of discriminating between those cardiac sounds which are the result of rheumatic inflammation, and those which arise from deterioration of the blood.*

9. *Rheumatism.*—In our first article we have given an abstract of a paper by Dr. Garrod, tracing the analogies of gout and rheumatism. This paper gave rise to a discussion among the members of the Westminster Medical Society, chiefly turning on the use of colchicum. The speakers, with few exceptions, considered the beneficial effects of this drug to be confined to the sthenic forms both of gout and rheumatism, and that ill consequences frequently attended its exhibition in chronic gout, and in debilitated habits.

10. *Scrofula and Tuberculosis, Analogies of.*—The following propositions are a *résumé* of the important work of M. Lebert on 'Scrofula.' They contain the essence of his doctrines and experience:

1. The disease described under the name of glandular scrofula is commonly a tuberculosis of the superficial lymphatic glands. The tubercular matter is here of the same kind as when it exists in other organs.

2. These tubercles have a manifest tendency to softening; the symptoms of inflammation and suppuration often arise from the tissues surrounding the tubercles.

3. Glandular tubercles do not constitute a form, but a complication of scrofula. The latter does not present any precise element which the microscope can discover. Scrofulous affections consist in a series of chronic inflammations or caco-plastic formations, which, from their multiplicity, duration, and alternations, denote a special morbid state affecting the whole economy.

* Dublin Press and Medical Times, Sept. 10, 1849.

4. Hypertrophy of the superficial lymphatic glands is rarer than tubercular degeneration.

5. Superficial tuberculosis often exists alone, without any scrofulous complication; but the two morbid states have a tendency to co-exist in the same subject.

6. It should, however, be remarked, that, in 614 patients affected with external glandular tubercles or scrofulous diseases, 439 were exempt from any trace of tuberculosis,—a fact which proves the two diseases to be independent of each other.

7. With respect to progress and prognosis, there is a notable difference between external glandular tubercles and internal tubercle, especially in the lungs. The former may exist for a great length of time without danger, then dry up or be eliminated. The latter progress more rapidly, and more often prove fatal.

8. External tubercles arise more frequently in a spontaneous manner than as a consequence of hereditary disposition. The latter manifests itself, in the same family, sometimes through scrofula, sometimes through tubercle,—a circumstance showing affinity, but not identity of the diseases.

9. External tuberculosis does not produce death, unless it be complicated with internal tubercle.

10. The prognosis becomes unfavorable whenever scrofulous affections of the bones or joints are added; or when a large quantity of tubercular matter is deposited in the glands,—for then internal tubercle arises more easily.

11. The surest means of eliminating the diseased matter is suppuration. External tubercles rarely become cretaceous, though they often remain stationary.

12. Scrofula is most frequent between the ages of 5 and 20; girls are more frequently affected from 10 to 15, than from 15 to 20; the contrary holds good for boys. Puberty does not exercise the influence which it is supposed to do over the progress of the disease; the influence of seasons is also feeble.

13. The influence of proper hygienic treatment is more marked in proportion as those means had been previously neglected.

14. There is no specific, nor any remedy capable of producing the absorption of crude tubercular matter. Iodine may improve the constitution and diminish the chronic inflammation of the tissues surrounding the deposits; but it does not remove the latter. Its use is contra-indicated by permanent dyspepsia or diarrhœa. Ioduret of potassium or of iron are the best preparations in such cases.

15. Cod-liver oil exercises no direct influence over glandular tubercle; it can only act usefully on the different scrofulous complications.

16. Calomel, once so much employed in the form of Plummer's pill, merely acts as a purgative on the inflammatory complications. We have no proof whatever of the utility of the preparations of gold, sulphate of barytes, or the salts of lime.

17. Bitters and tonics are indicated in cases of long-continued suppuration. Bark and iron are the best. A decoction of nut leaves is a useful adjuvant. Salt water and other medicated baths are also useful as means of improving the constitution; but the tubercular matter can only be removed by suppuration.

18. Sulphurated baths are useful when a great number of ulcers are suppurating. Hydropathy, with the use of iodine, merits examination.

19. A good animal and vegetable diet, pure air, cold baths, and exercise, act favorably on the constitution.*

11. *Scrofula, Treatment of, by Walnut Leaves.*—M. Negrier has published a third memoir on the treatment of scrofulous diseases by the leaves of the walnut tree. The first of these appeared in 1841, since which time he has accumulated a sufficient number of facts to confirm him in the opinion previously expressed. The present communication is made rather with the intention of giving the experience of foreign practitioners than of offering any new information of his own; and accordingly he adduces, at some length, the corroborative testimony of M. Nasse, Dr. Kreutzwald, and Dr. Michele Borgioli, completing his memoir with the following deductions:—

1. Scrofulous affections admit of a radical cure by the preparations of walnut leaves.

2. The action of this medicine is so constant, that we may count upon the successful treatment of a great number of patients by its use.

3. The action of walnut leaves is slow, innocuous, and durable.

4. Scrofulous diseases of the skin, mucous membranes, and lymphatic glands are cured more readily and surely by the preparations of walnut leaves than by any other medicine. So are also ophthalmic affections of a strumous nature.†

[On the strength of M. Negrier's former panegyrics of these preparations, we have been induced to give them a trial. We have used an extract and a simple infusion; our experience, however, was not sufficiently encouraging to induce us to substitute the walnut for cod-liver oil, and the preparations of iodine.]

PART II.—SPECIAL PATHOLOGY.

§ I.—*Diseases of the Nervous System.*

12. *Apoplexy, its Relation to Fatty Degeneration of the Cerebral Blood-vessels.*—Mr. Paget has recently made a communication to the Abernethean Society of great interest, in which he traces a connexion between fatty degeneration of the coats of the smaller blood-vessels of the brain, and apoplectic seizures.

In the least degrees of the disease, he states that the only apparent change of structure is, that minute, shining, black-edged particles, like molecules of oil, are thinly and irregularly scattered beneath the outer surface of the small blood-vessels of the brain. Such a change may be seen in the vessels of portions of the brain that appear quite healthy, as well in the capillaries as in branches of both arteries and veins of all sizes, from 1-150th of an inch in diameter, to those of smallest dimension.

As the disease makes progress, the oil-particles may increase in number till the whole extent of the affected vessels is thick-set with them, and the natural structures, even if not quite wasted, can hardly be discerned. While their number thus increases, there is, also, usually, a considerable increase of the size of many of the oil-particles, and they may be seen of every size,

* From Medical Times. † Archives Générales, Février, Avril, 1850.

from an immeasurable minuteness to the diameter of 1-2000th of an inch. In other places, one sees, instead of this, increase of scattered oil-particles, or together with it, groups or clusters of similar minute particles, which are conglomerated, sometimes in regular oval or round masses, like granule cells, but more often in irregular masses or patches in the circumference of the vessel.

In a single fortunately selected specimen, one may see, in different branches of a vessel, all these degrees or states of the disease—the less and the more thickly scattered minute oil-particles, the clusters of such particles in various sizes and shapes, and the larger particles like drops of oil.

When the fatty degeneration has made much progress, changes in the structure, and, not rarely, changes in the shape also, of the affected blood-vessels may be observed. The chief change of structure appears to consist in a gradual wasting of the more developed proper structures of the vessels: growing fainter in, apparently, the same proportion as the disease makes progress, the various nuclei or fibres are at length altogether lost, and blood-vessels of even 1-150th of an inch in diameter appear like tubes of homogeneous pellucid membrane, thick-set with the fatty particles. The structures of the vessels are not merely obscured by the abnormal deposits: they waste and totally disappear.

The changes of shape which the vessels may at the same time undergo are various. Very commonly, the outer layer of the wall is lifted up by one or more clusters of oil-particles, and the outline of the vessel appears uneven, as if it were tuberous or knotted. Sometimes the outer or cellular coat of the vessels is for some distance raised far from the middle coat, as if it were inflated, and the space between them contains numerous particles of oil; (but, perhaps, this raising up of the outer coat is often produced by water being imbibed while preparing the specimen for examination.) Sometimes, but Mr. Paget thinks only in vessels of less than 1-500th of an inch in diameter, partial enlargements, like aneurismal dilations or pouches of their walls, are found.

The vessels most liable to this disease are, the author informs us, the arteries of about 1-300th of an inch in diameter; but it exists, generally, at the same time, in the veins of the same or of less size. As a general rule (judging from the specimens hitherto examined), the disease decreases in nearly the same proportion as the size of the vessels, and the smallest capillaries are least, if at all, affected. But there are many exceptions to this rule; and it is not rare to find vessels of from 1-2000th to 1-3000th of an inch in diameter, having parts of their walls nearly covered with the abnormal deposits.

The principal and first seat of the deposits is, in arteries, in the more or less developed muscular or transversely fibrous coat:—in veins, it is in the corresponding layer, immediately within their external fibro-cellular nucleated coat:—in vessels, whether arteries or veins, whose walls consist of only a simple pellucid membrane bearing nuclei, the substance of this membrane is the first seat of the deposits. In some cases the outer fibro-cellular coat of both arteries and veins appears to contain abundant fatty matter. But it is seldom that, in an advanced stage of the affection, any of the several coats of a blood-vessel can be assigned as its chief seat; for even in large four-coated arteries they wholly waste, and their remains appear united in a single pellucid layer, of which the whole thickness may be occupied by the deposit.

The paper contains the detail of three cases, in which the above-described connexion was well marked.*

* Medical Gazette, Feb. 1850.

13. *Meningeal Apoplexy.*—Four cases of meningeal apoplexy are reported in a memoir by M. SCHUTZENBURGER, three of which occurred in males between the ages of 34 and 69, the fourth in a female aged 44. The author, in commenting on these cases, has taken occasion to verify what has been said respecting the encysting of the effused blood.

In reference to symptoms, it results from the investigations of M. Schutzenburger, that in meningeal apoplexy the attack may be sudden. One case had never complained of cerebral symptoms of any kind, when without warning he felt giddy, and almost immediately became insensible. In two other instances, however, there were certain precursory symptoms. The signs of the hemorrhage into the arachnoid vary in some instances, it appears that neither motility, sensation, nor intelligence are abolished, but feebleness of the limbs only occurs; in none of the author's cases was there perfect paralysis. Rigidity of the limbs appeared in every case, but not contraction. Disturbance of the intelligence, amounting at length to complete coma, is a constant symptom.*

14. *Epilepsy, theory of.*—It was our intention to have given, in our last volume, Dr. TODD'S views upon the theory of the epileptic paroxysm, as exhibited in his lectures before the College of Physicians. We take the present opportunity of remedying the omission.

In conducting the inquiry, Dr. Todd observes that there are three things to explain; viz. the sudden occurrence of coma, the sudden absence of voluntary power, with more or less violent convulsions, and lastly the *periodicity* of the attacks. At the outset he states his belief that epilepsy is not of spinal origin. This he considers to be the case because the spinal cord is not the primary seat of disease, nor is the sequence of symptoms such as would then occur. The brain is therefore, he says, the primary seat of the disease; and he then proceeds to determine what part of that organ is first implicated. He first inquires whether the medulla oblongata is that part, and decides in the negative. The corpora striata and optic thalami are also determined not to be the seat of the disease, as is also the cerebellum; there remain, therefore, only two parts in which it can be located, viz. the cerebral hemisphere and the mesocephale. Here he states his conviction that both these parts are concerned in the production of the paroxysm, firstly and mainly the hemispheres, secondly and consecutively the mesocephale.

The first part of this proposition the author illustrates by a reference to the known physiology of the hemispherical ganglia, as well as to the results of *post-mortem* examinations of old epileptics; the second, by the result of experiments, whence he arrived at the general conclusion which we state, for brevity sake, without following him throughout the steps of the process. This is that "the part of the encephalon primarily disturbed is the hemispherical lobes; if the disturbance do not go beyond a certain point, the phenomena are limited to loss of consciousness and impaired intellectual action. But if the disturbance be considerable, then the tubercula quadrigemina and mesocephale become involved, and *epileptic convulsions* are produced. If the disturbance of this centre be very great, the medulla oblongata and spinalis become excited, and the convulsions are complicated with a good deal of the tetanic character."

Having thus determined the seat of epilepsy, Dr. Todd next enters into the question of the nature of the cerebral disturbance. Is it a state of inflammation, or congestion, or deficiency of blood, or of altered quality of blood?

* Gazette Médicale de Strasbourg, 1849.

Dismissing inflammation, we may state, that while discussing the question of congestion, the author criticises the opinions expressed by Dr. Marshall Hall (see vol. IX, p. 15), on the part played by the muscles of the neck in producing the epileptic paroxysm through congestion of the cervical veins. The author denies that the action of the platysma is to compress the cervical tissues. He also denies that there is any connexion between *laringismus* and convulsion, as stated in Dr. Hall's ingenious theory, and bases his objection upon direct experiment, by which he proved that convulsions could be induced after free division of the trachea.

That anæmia of the brain may induce epilepsy, Dr. Todd considers far more plausible than that it depends on congestion, but neither of these variations in quantity of blood being sufficient to account for all the phenomena of the disease, he next proceeds to develope a theory which we give below:

He lays it down that epilepsy denotes a state of abnormal nutrition of the brain, and that this abnormal nutrition shows itself in the unnatural development of the nervous force at particular times, in such a manner as to disturb the functions of the whole cerebro-spinal centre, but of the brain in particular.

These periodical evolutions of the nervous force, which give rise to the complete epileptic paroxysm, may be compared to the electrical phenomenon described by Faraday, under the name of *disruptive discharge*.

He remarks that this phenomenon requires for its production—first, a highly-charged or polarized body, which, when it reaches a certain point of tension, may be made instantaneously, and with violence, to discharge its electricity to a conductor.

Thus the abnormal nutrient actions of the brain, in epilepsy, tend to produce a polar state of the particles of the hemispheres, of the tubercula quadrigemina, and of the mesocephale, which, when it reaches a certain tension, discharges itself, and induces, with great violence, a rapid polarization of the neighbouring particles, involving in the general disturbance the medulla oblongata, the cerebellum, and the spinal cord.

In some instances the tension may be limited to the hemispheres of the brain; then consciousness and intellectual action only are disturbed; either a comatose state is induced, which lasts for a certain time, or mania or delirium are produced. In such cases the state of tension may pass off slowly and gradually without any distinct discharge, and so the nervous matter may assume a state of equilibrium, without creating any serious disturbance of the other parts of the cerebro-spinal centre. In other cases the hemispheres and mesocephale pass quickly to the highest degree of tension, and a rapid discharge takes place, exciting the other parts of the brain and the spinal cord with all the violence of the discharge from a highly-charged Leyden jar, or the shock from the electrical organs of the torpedo or gymnotus.

The gradual and silent manner in which this state of tension is induced in the brain, and the absence of all appearances of mischief recognisable by our means of investigation in recent cases,—the rapidity with which fit succeeds fit in the acute cases, leaving likewise no trace of organic mischief, he considers to denote that the peculiar state of the brain in epilepsy is brought on not by any change in the quantity of the blood, but by the accumulation of some material in the blood, which, acting on the brain as a poison, excites this polar state, and this disruptive discharge, and so escapes from the system, leaving the brain free from disturbance until a fresh accumulation excites a new paroxysm. The nervous battery is excited by an abnormal fluid—a fluid which causes it to develope the nervous force in irregular quantity—a fluid which, when fully charged with its particular morbid element, excites a high

degree of tension of the cerebral nervous matter, which can recover itself only by a discharge, which produces more or less serious disturbance of the neighbouring parts of the brain.

This humoral doctrine of epilepsy Dr. Todd considers to be supported by numerous facts, such as the influence of certain poisons, the frequent connexion of the disease with imperfect renal elimination, &c. The nature of the morbid matter he does not determine, but believes that it may be various.*

15. *Delirium Tremens.*—In a paper published in the 'London Journal of Medicine' (May), Dr. James Bird has studied the types of delirium tremens, in the relation of the pure or simple form of this disease to sequent and kindred affections of the brain, of an inflammatory, febrile, and epileptic character. These are now variously arranged in nosological systems, as delirium tremens nervosum and traumaticum, phrenesia potatorum, encephalitis tremefaciens, delirium febrile tremens, and irritative fever of drunkenness. In order to obtain a practical foundation for the different modifications of this complaint, whether of a simply nervous or inflammatory character, Dr. Bird considers them under the four divisions into which he has classed the phenomena. He characterises each form by a distinct definition of the modifications, which, in a practical point of view, are to be considered as transitions only from less to greater degrees of the same complaint, or the modifications of a like pathological condition, dependent, for the peculiar marks of manifestation, on the less or greater effect of predisposing causes, and the previous morbid changes effected by them in the constitution, particularly in the excretory functions of the liver and kidneys. Should there be any difference of opinion as to the propriety of the nosological arrangement of modifications of delirium tremens, usually adopted by different authors, into nervous and traumatic, idiopathic and symptomatic, and whether such consist in nervous erethism or inflammation, the divisions into simple, inflammatory, pyrexial, and epileptic, as adopted in the paper, will enable the physician to at once comprehend how much nervous or vascular derangement may have precedence, and thus guide his judgment in determining how much the particular symptoms may call for the administration of opium or antiphlogistic remedies. Four tabular statements of these several modifications were given, embracing an analysis of seventy cases. Regarding the natural tendency of the first form to terminate in a salutary and spontaneous sleep, at a period seldom less than sixty or more than seventy-two hours from the commencement of the paroxysm, which may extend, however, to six entire days, Dr. Bird agreed with the observations made by Dr. Ware, of Boston, on this subject. The generality of cases composing the first table seldom ran a course beyond the beginning of the fourth day, though, in some of them, the nervous erethism, and the increased vascular action of the cerebrum, extended beyond this period. In one instance, the symptoms did not subside until the ninth day; but here the exalted nervous sensibility, associated with peripheral irritation, was accompanied, as appeared, by functional exhaustion of the nerves of the cerebral blood-vessels, followed by relaxation of the capillaries akin to inflammation. The inflammatory form of the disease, which, where the irritation is purely cerebral, is a species of *asthenic encephalitis*, is characterised by a greater degree of vascular determination to the brain and its connexions than the first, or by a state of inflammation in some of the remote organs, either the stomach or lungs, reacting on the brain. The third form, which is usually met with in the malarious season of the year, from July to

* Medical Gazette, 1849, p. 815.

October, is generally an *asthenic form* of febrile delirium, such as occurs during fever in those of intemperate habits. The fourth form, or the epileptic, is analogous to the delirium, coma, and convulsions induced by certain narcotic poisons, as belladonna and stramonium; between the symptoms of which poisoning, and those of true delirium tremens, a differential diagnosis was given. The diagnosis, also, between the simple erethismal type and the purely cerebral inflammatory one, is pointed out, and the characteristic symptoms of each detailed. The simple forms of the complaint, particularly in second and third attacks, present many of the characters of *acute dementia*, from which they differ but little. Dr. Bird thinks, in pathological condition, each renewed attack of the former malady seems to bring the symptoms nearer and nearer those of the latter. In both diseases there is the same lost power of perception and attention; the brain being no longer susceptible of receiving and retaining impressions transmitted to it, and consequently incapable of associating the relations, or preserving the recollection of objects presented to it. The morbid appearances of the brain, and peripheral organs of the chest and abdomen, are next detailed, and the general pathology of delirium tremens given. The *sthenic* or *asthenic* symptoms, which become the objects of treatment, have predominance according as the general nutrition of the system has been well or ill performed; or as the nervous centres are in a state of healthy energy, or of atrophy, with defective innervation. The indications of treatment to be acted on are—1st. To allay the exalted sensibility of the central nervous organs or their peripheries, by reducing vascular derangement and inflammation, by means of mild antiphlogistic remedies, and by the removal of all irritating diseased secretions from organs that react on the brain. 2d. To restore the organs of assimilation to a healthy condition, so as to supply fresh nutrient materials to the blood, and to prevent nervous exhaustion by a moderate allowance of stimuli combined with such materials. 3d. To eliminate poisoned products from the blood, by restoring the proper excretory functions of the liver and kidneys. To fulfil the first indication, a tartar-emetic solution, in the proportion of half a grain of the tartrate of antimony to two ounces of water, with a drachm of tincture of opium; and an equal quantity of nitrous ether or colchicum may be used as an effectual means of doing so. This allays the excitement of the brain, and serves to promote healthy action of the skin and kidneys. When the biliary secretion is morbidly increased, emetics are of great use in allaying the irritation of the stomach. When purgatives are necessary, calomel in large doses, or combined with antimonials and opium, followed by castor oil, were recommended as the best therapeutic agents, as the too free use of strong purgatives is often followed by increase of excitement. Quiet seclusion, in a darkened apartment, where the patient can be watched by a well-instructed nurse; cold douches to the head three or four times daily, and occasionally the local abstraction of blood by leeching or cupping, were the other remedial means recommended. Moderate quantities of thin sago or arrow-root, with wine, brandy, or gin, must be given according to circumstances, in fulfilment of the second indication; and in carrying out the third, Dr. Bird recommends the free use of calomel, with diuretics.

[For the above abstract of Dr. Bird's paper, we are indebted to the report in 'Medical Times,' March 23.]

16. *Chorea, Treatment by Strychnine.*—Dr. Trousseau is in the habit of using strychnine in chorea, but considers justly that so powerful a drug requires to be exhibited with great caution. Accordingly, he has published a paper with the express object of detailing his method of giving it, which consists in employing very small doses, increasing them by regular gradations,

until slight tetanic rigidity is produced, then suspending the medicine or continuing the last dose, but never increasing it beyond that point. He points out that an itching of the skin and scalp generally precedes the rigidity, and that the masseter muscle is first affected. For this reason he advises that the child should frequently be asked if he has any difficulty in opening the mouth, by which precaution, the earliest toxical effects of the medicine may be recognised.*

17. *Neuralgia—Herpes Zoster.*—It is familiar to most practitioners as a clinical fact, that the eruption of Herpes Zoster is accompanied and followed by neuralgia of the intercostals, often of a severe character. M. Giraud † inquires the best treatment, having found all methods equally useless. In reply to him, Mr. Marriott ‡ states that he has observed that the duration of the neuralgia depends very much on the age of the patient; that in young subjects it generally subsides in a few days, but in old people he has known it last for years. He has no remedial suggestion to offer. Dr. Palmer found the pain to yield most readily to the oxide of silver, and the external use of the tincture of arnica. Mr. Humpage prefers a blister, followed as soon as healed by a belladonna plaister.—[We should suggest the endermic use of morphine after a blister is raised, or electro-galvanism, which we have found successful in a severe case of intercostal neuralgia after all other treatment had failed.]

§ II.—*Diseases of the Respiratory System.*

18. *On the amount of Respiration heard in Pulmonary Diseases.*—In a paper with this title, Dr. Kennedy combats the opinion that in some forms of pulmonary disease, such as pneumonic hepatization, and pleurisy with effusion, the sound of respiration is ever entirely absent. That such is the case is, however, commonly believed; and we have so frequently met with complete extinction of respiration over certain portions of lung, both in pneumonia and empyema, that to us it appears strange that the fact should be doubted. §

19. *Disease of the Respiratory Organs, simulated by the irritation of an elongated Uvula.*—A Brussels physician, Dr. Hoboeke, has narrated two cases which had been treated for bronchitis and phthisis respectively, both of which, however, depended upon an elongated uvula; this was amputated, upon which the thoracic symptoms immediately subsided. Cases of this kind are continually met with. ‖

20. *Nervous Cough.*—M. Sandras describes the following forms of nervous or convulsive cough:

1. The patient can receive no physical or moral impression, without suffering from a cough almost convulsive in its character. In examining the chest of such a person, the physician may be led into grievous error, and the unnecessary fear of incipient phthisis, unless he examines it on various occasions and under different circumstances. Patients with incipient phthisis also cough from the slightest cause; but it will be generally found that in those cases the impression is physical, while in those we are alluding to it is oftener moral.

* Revue Medico-Chirurgicale, Jan. 1850.
† Provincial Journal, Dec. 12, 1849.
‡ Ib. Dec. 26.
§ Dublin Med. Press, April 24, 1850
‖ Revue Medico-Chirurgicale, Mars 1850.

2. Another form of cough, having some analogy to this, is observed whenever certain functions are brought into play, or when they are more actively exerted than usual. Thus it is found in some whose meals have been too long delayed, in others as soon as they have eaten, especially if rather fully. Other persons cannot take a little extra muscular exertion without bringing on a tormenting cough of this kind. In both this and the preceding form the cough is dry and capricious, exhibiting very inconstant physical signs; but this latter form is somewhat more fixed in character than the first, inasmuch as in the same person it is always when the same function is fulfilled that it is produced; and it seems, too, to be more dependent upon disorder of the organs in connexion with the exercise of whose functions it appears; and this should be our chief guide for its treatment.

3. Another cough is observed upon the slightest irritation of the bronchi being produced; so that the least cold brings on a convulsive cough nearly as bad as that of pertussis. Sometimes, and especially in children and very young adults, it takes on this form at the very commencement of the cold, and retains it until coction is produced. Each paroxysm is accompanied by a dry, raucous sound, and attempts at vomiting. Sometimes it is periodical, the disease only gradually assuming the characters of an ordinary ripening catarrh. In other cases the spasmodic character is only observed as the cough is drawing towards an end. Instead, however, of maturation taking place, the expectoration continues frothy and transparent, and is only ejected by convulsive efforts and vomiting—the paroxysm being brought on by the slightest cause, and a state of spasmodic suffocation being almost induced, until a little transparent and frothy matter is expectorated, when all becomes quiet and normal until a new paroxysm. In some cases the cough suddenly ceases, without the expectoration having undergone any change; but this is rare. The causes of this pertussoid cough are not of easy appreciation. At the commencement, all is like a common cold; and it is the reiterated catching cold in an eminently neuropathic subject that seems to induce the aggravation. The prognosis, as regards immediate danger, is favorable; but is more serious in respect to future consequences, owing to the various evil consequences which may ensue upon the congestions the paroxysms give rise to. The destruction of sleep and disturbance of digestion which it causes are other important circumstances. Among the more serious results, is the production of hernias and of emphysema pulmonum. The irritation of the glottis and larynx should be relieved by tepid aqueous or narcotic vapours, and by the use of demulcent emulsions with laurel-water. When the expectoration is difficult, syrup of poppies, with small doses of tartar emetic, should be given, the antimony, whether it causes vomiting or not, affording great relief. So, too, small doses of extract of belladonna every night, or night and morning, should be given when the expectoration is somewhat modified, and in a few days the convulsive character of the cough usually abates. When this drug disagrees with the patient, it should be used endermically.

4. This variety may be called *hysterical*, from its occurring in hysterical patients. In a subject whose respiratory organs are habitually in a good condition, all at once an irregularly paroxysmal cough comes on, occurring at frequent intervals, and sometimes almost without intermission. Hysterical phenomena sometimes precede or accompany the cough; while at others it ceases instantly that these appear. The cough is found to get worse and worse, in proportion to the development of the hysteria; and this without any physical explanation of its intensity. The pulse is not febrile, but may be irregular, and such a one as is found in nervous subjects. The prognosis is favorable, unless the cough is mistaken for a phlegmasia, and aggravated by maltreat-

ment. The treatment is, in fact, that which is proper for hysteria; but two means are especially indicated—the use of belladonna, and the employment of baths. Belladonna, given in doses of one seventh of a grain every half-hour, is highly efficacious; and it is rare for five or six doses to be given before improvement is visible. Baths at from 84° to 89° act as if by enchantment; but sometimes it is useful to give them at from 75° to 82°; and this is the temperature which will in most cases prove the best, after the patient has already employed the higher.*

21. *Phthisis; Etiology.*—Under the title "The Law of Mortality in Phthisis," Dr. Duncan has carefully investigated the evidence which bears upon the influence of moral agents in developing tubercular disease. He has thoroughly sifted the reports of the registrar-general with this view, and in so doing has corroborated the unexpected fact mentioned likewise in the report of the hospital for consumption (vide Abstract, vol. x, p. 261), that in the rural districts females are more prone to the disease, while in towns men are. This he finds can only be explained by a reference to the influence of mental causes, the operation of which he elucidates with much ingenuity. Whether he be altogether right or wrong in his surmises, it is at all events certain, that we do not in ordinary practice take sufficient account of the subtle agency of mental causes both of disease and of convalescence. Many a death is attributed to an east wind which is due to blighted affections, and many a recovery is attributed to a warm climate or a particular treatment, which if minutely investigated will be found to depend on the reanimation arising from new scenes, or the hope excited by altered circumstances.†

22. *Phthisis; Treatment.*—Several communications have recently been made on the cure and curability of phthisis pulmonalis: the two chief of these are one by Dr. Bennett, and one by Dr. Turnbull.

In Dr. Bennett's essay reference is made to the evident dependence of the disease upon derangement of the assimilative processes, by the faulty action of which too much albumen and too little oleaginous principle are conveyed into the economy. Reasoning upon this assumption, the author thinks that we are warranted in believing that by such means as will rectify this condition, and at the same time check the deposit of tubercle, former exudation will be rendered abortive, and even ulcerations may be induced to cicatrize. What these means are the author proceeds to state.

As we have said he considers the origin of the disease to lay in the digestive organs; this opinion he holds almost to the exclusion of hereditary influences, herein agreeing with Dr. Walsh in his report of the hospital for consumption, noticed in a former volume, as well as of vitiated atmosphere, admitting only that they may co-operate as causes with such circumstances as induce impoverished nutrition.

These considerations, he observes, render it evident, that the cure of phthisis by art will be proportionate to our means of controlling the circumstances which induce—1, the diseased condition of the blood; 2, the local exudation; 3, the ulceration of the pulmonary tissue. In illustration of this he takes a survey of the general process of nutrition. He observes, that healthy nutrition cannot proceed without a due admixture of albuminous and oleaginous elements. This is inferred from the experiments of Teidemann, Gmelin, Magendie, and others, as well as from the consideration that these principles are found in milk, the earliest animal sustenance. The same circumstance is pointed out likewise by the chemical researches of Prout and

* Bulletin de Thérapeutique, and Brit. and For. Med.-Chir. Rev., Jan. 1850.

† Dublin Quarterly Journal, Nov. 1849 and Feb. 1850.

Liebig, who assert that carbonised and nitrogenised food are necessary to carry on nutrition, inasmuch as oil is a type of one and albumen of the other. The author, however, considers the theory faulty, because it does not show how these elements form tissues, and why it is that all forms of carbonised and nitrogenised food is not nutritious, but such only as are convertible into oil and albumen.

The reason of this was first pointed out by Ascherson in 1840, and was communicated to the profession by the author of the present paper. He, however, differs so far from Ascherson, that he believes that the union of oil and albumen does not pass at once into blood-globules, but first passes through a series of transformations.

These successive changes he enumerates as—1st, introduction into the alimentary canal of organic matter; 2, its transformation into oily and albuminous compounds; 3, the imbibition of these and their union in the termini of the lacteals to form elementary granules; 4, the transformation of these into chyle corpuscles, and subsequently into blood-globules.

Reasoning upon the supposed function of the pancreatic fluid, that of emulsionising oily matters, the author regards the peculiarity of phthisis to be an acidity of the primæ viæ, which while it renders the assimilation of albuminous principles more easy by neutralising the pancreatic fluid, prevents the assimilation of the oily principle. In consequence of this less carbon is excreted by the lungs, and therefore these organs, according to the author, become liable to congestion and exudation of an albuminous product tubercle, one which, as it is not capable of further development into cells, becomes effete, and as it were a foreign body.

With this statement of his hypothesis of the production of phthisis, Dr. Bennett proceeds to the more immediate object of his paper.

To improve the faulty condition of nutrition, as is well known, mere quantity as well as quality of food will in some cases suffice; this is seen in the improvement of some patients upon beef-steaks and porter simply, but in such cases the author thinks that the assimilative powers have not materially suffered. In most cases the animal oils are directly called for, and cod-liver oil forms his staple of treatment.*

The question of the curability of phthisis is likewise discussed in a clever essay by Dr. Turnbull of Liverpool. This author, as does also Dr. Bennett, bases his belief in the amenability of the disease to treatment on the frequent discovery of the remains of tubercle in a cretaceous state and in the cicatrices, which dissection reveals in patients dead of other diseases, but who have been known to have manifested the symptoms of phthisis at a prior period. In demonstration of this he quotes Laennec, Rogée, Williams, and Bennett.

At a farther page a subject of very great interest is entered upon, viz. the antagonistic influence of other diseases upon tubercular phthisis; emphysema of the lungs is one of these, and a case in point is related. The explanation of the fact is a matter of some difficulty. "Rokitansky thinks that emphysema hinders the formation of tubercle by inducing a state of venosity of the blood, in which it is imperfectly arterialised and wanting in fibrin. The author considers that it has only a local effect, the tenuity of tissue prevented the usual supply of blood, and consequently of deposit. In the same way emphysematous lung is less prone to pneumonia. Pregnancy is also thought to interfere with the progress of phthisis, and is believed to have this influence by the author. On the other hand, however, the fact is disputed by

* Edinburgh Monthly Journal, Feb. 1850.

Louis and Andral, and latterly M. Grisolle* (vide Art. 13) has published a paper with the special object of controverting the opinion. He has ascertained by statistical inquiry that the average duration of phthisis in pregnant females is only ten months, while in the non-pregnant it is fifteen months, according to Louis. On the antagonism of phthisis and intermittent fever, respecting which so much has been written, the author barely alludes. On this subject we may refer the reader to our ninth volume, where a full account of the matter is to be found.

In his remarks on treatment, Dr. Turnbull speaks particularly of the efficacy of cod-liver oil, but he refers also to mercury, iodine, and alkalies.

Mercury is properly spoken of as of limited usefulness, or even positive injury in tubercular phthisis. Iodine, in the form of iodide of iron, the author regards as one of the best tonics in the early stage, and he speaks favorably of the external use of the iodide of lead. His testimony to the value of cod-liver oil is, as may now be predicated, to the effect that it is capable of inducing a degree of amendment quite unattainable by any other known therapeutical regimen.†

—Under the title, "A few Suggestions on Consumption," Dr. Robert Hull has endeavoured to revive Sydenham's heroic treatment of phthisis by horse exercise. In addition to this, he strongly urges the importance of liberal diet, consisting of beef-steaks and porter, and the abandonment of the medicinal means, which he conceives to be the ordinary resource of the profession, such as opiates and expectorants. While we state that Dr. Hull's treatment, barring the equitation which we conceive, in spite of Sydenham, to be little applicable to advanced cases, is no other than that of every well-informed practitioner, we must join issue with him in his unqualified condemnation of opiates, which we believe, when given in moderate doses and with particular indications, capable of affording great comfort, even if they do nothing towards cure. Dr. Hull has not much confidence in cod-liver oil, but as it does not appear that he has given it a fair trial, his evidence will weigh little in comparison with the testimony in its favour, which will be found in this and our preceding volumes.‡

§ III. *Diseases of the Circulatory System.*

23. *Fatty heart.*—In connexion with the Essays of Dr. Ormerod and Kennedy, abstracts of which will be found in the present volume (p. 38), we have the opportunity of calling attention to a very comprehensive memoir on the same subject, presented to the Medico-Chirurgical Society by Dr. Richard Quain.§ The author commenced his observations by pointing out that fatty disease of the heart appeared under two forms; in one of these, fat grew on and among the fibres, but the fibres themselves, though concealed, were unaltered. In the other form the muscular fibre undergoes a true fatty *degeneration.* In such cases there was not of necessity any growth of fat about the heart. The author also traced the progress of this change as shown by the microscope, and explained its action on the form and colour of the organ. After these

* See Prov. Med. and Surg. Journal, Dec. 26, p. 715.

† Inquiry into the Curability of Pulmonary Consumption. By James Turnbull, M.D. London Journal of Medicine, Feb. 1850.

‡ A Few Suggestions on Consumption. By Dr. Robert Hull. Churchill. 1850.

§ Reported in Medical Gazette, March 23.

preliminary observations, the author proceeded to an historical account of preceding writings, giving a complete *résumè* of our knowledge on the subject, commencing from the oldest authors to the time of Harvey, and thence up to the present time.

He showed that the disease here described as true fatty degeneration of the fibres of the heart had been distinctly recognised, though, like fatty degeneration of the liver, the exact change in the fibre has not been distinctly ascertained. For information on this latter point we are indebted to the researches of Williams, Peacock, Rokitansky, Paget, Ormerod, and others. The author took occasion here to describe the differences of opinion which had existed as to the nature of these softened hearts, and also to contrast the character of fatty degeneration of the heart with the fatty degeneration of voluntary muscles.

He traced the circumstances under which these diseases occurred. He showed the relation which the *growth* of fat on the heart bore to the presence of its elements in the blood, and to the influence of the age, sex, habits of life, &c., of the individual on this condition.

Fatty degeneration he described as a process of decay or true degeneration. He established this conclusion by a series of observations on the microscopical and chemical character of the substance called adipocere, by experiments made by himself and others on the artificial formation of fatty matters in albuminous and fibrinous textures external to the body, and by the identity of the appearances in this artificial and in natural processes. He mentioned a great variety of circumstances under which this change took place in the living body, in which it must have occurred independently of any direct communication with the vascular system. He mentioned the names of several authorities on these points, but more particularly, in reference to their pathological import, those of Williams, Paget, and Rokitansky, and established the inference that, when the vital properties of these higher animal substances were impaired, they yielded to the physical influence by which they were surrounded, and fell into the class of more simple compounds shared by them with plants and minerals. He showed, by reference to Mr. Paget's observations, that the first step in this process was an impairment of the nutrition of the organs, and then he detailed the cases in which this impairment occurred. 1st, the heart participating in a general mal-nutrition of the body; or, 2d, suffering locally by disease of the coronary vessels, or as the effect of endo- and pericarditis. Numerical illustrations of these facts were given. The author then referred to the diseases which were found in association with this condition, they being chiefly degeneration of other organs, blood-vessels, &c.

The most frequent seat of the disease, the age, the sex, the station in life of the individuals, and various facts in connexion with the history of the disease, were also numerically illustrated.

The characters of the so-described soft flabby hearts, and the differences of opinion as to their nature, were discussed, and their relation to fatty degeneration considered.

The *effects* of these diseases were described as being those connected with impairment of structure and function, causing derangement of the circulation. It was shown that, of 15 cases of extreme accumulation of fat on the heart, 5 had suffered from giddiness and coma, 8 from syncope, and 9 from short breath. Of the 15, 14 had died suddenly—viz., by syncope, or in an analogous condition, 10; by rupture of the heart, 3; by coma, 1.

In reference to the effects of fatty degeneration on the *structure* and *functions* of the heart, the author showed that it was found in connexion with hypertrophy in 39 out of 68 cases. He believed this to be due to

hypertrophied hearts suffering from impaired nutrition more readily than other hearts,—not, as Rokitansky supposed, to a disturbance of the balance of the nervous functions. The heart may be found unchanged in size, or decreased. The diminished consistence of the tissue permitted the occurrence of some of the most fatal lesions to which the organ is liable—viz., rupture, which took place in 25 of the 68 recorded cases. In 2 cases the rupture perforated the walls of the heart. In other cases it was incomplete, being confined either to the internal surface, the external surface, or in the substance of the heart. Rupture in the substance gave rise to the appearance called by Cruveilhier cardiac apoplexy. The blood effused in these cases may become encysted, and losing its colour give rise to the appearance of an abscess. Cardiac aneurism may also be formed. Illustrations of these facts were given from the tables of cases. The effects of fatty degeneration on the heart's functions gave rise to coma, and even apoplexy. The power of the right side of the heart being weakened, its cavities became filled, and the circulation thus obstructed. Illustrations from preceding writers on this point were given. The impaired powers of the left side of the heart were on the other hand a frequent cause of faintness or syncope. It was present in 15 cases. This syncope may amount to a mere feeling of faintness, or to so complete an arrest of the vital powers as to cause sudden death. Sudden death occurred in 54 of 68 cases, in 21 of which it was by syncope. *Pain* in the region of the heart, and *breathlessness*, with certain peculiarities in each, were also numerically illustrated, and the causes on which they depended considered. The syncopal feelings, the pain and the breathlessness, may occur independently of each other, or in combination. They may thus give rise to the phenomena known as *angina pectoris*. It appeared to the author that this condition of the heart afforded in many cases a sufficient explanation of the pathology of this disease; and he expressed his opinion that many of those cases in which no disease existed, in which it was attributed to disease of the coronary arteries, or to fat on the heart, were in all probability examples of this fatty degeneration which had so long been overlooked. He confirmed this opinion by the details of cases in the tables. *Hereditary predisposition* and *the duration* of the disease were treated of so far as the fact permitted.

The symptoms and diagnosis of the disease, more particularly in reference to fatty degeration, were described. A distinction was drawn between those cases in which the heart participated in the general impairment of the health, and was perhaps equal to the demand made on its functions, and those in which the heart, being impaired by local causes, suffered out of proportion to the system generally. In the latter case the symptoms were very unequivocal. In addition to those phenomena referred to in the preceding section, the pulse almost always gave indication of the condition of the heart. It was recorded in 13 cases as being irregular, in 14 as being weak, in 8 slow. In a few as being full, regular, or quick, in none strong.

The feeling of fatigue, from slight causes, particularly from ascending heights, the breathlessness, &c., all progressive from being so slight as scarcely to attract notice, to the most extreme suffering on exertion, were mentioned. An anxious expression of countenance, mental irritability, and copious sweats from trifling causes, were also noticed. The physical signs of the disease—viz. feeble impulse, feeble first sound, extended dullness, perhaps a murmur with the first sound, from disease of the columnæ carneæ, or imperfection in the second sound, were also discussed.

The treatment which in some cases had been found more successful than might have been supposed, was such as was calculated to improve the condition of the blood. We could not restore lost fibres, but we could render those

which remained more effective; we could improve the material to be supplied by the blood, and we could render this fluid a better stimulant. The author referred particularly to the management of the digestive organs, to the use of iron, and the relief of paroxysmal attacks by the use of antispasmodics. Narcotics were not borne, and he referred to examples of their injurious effects, as also to the ill effect of exertion or over exercise. Leeches to the region of the heart, followed by counter irritation, had, in some instances mentioned, been found very useful in preventing the return of distressing paroxysms of dyspnœa and pain. The author concluded by a quotation from Boerhaave, aptly illustrating the formidable effects of this otherwise inoffensive material, when it occurs in a situation to which it does not belong. He apologised for the length of his communication, which was due to the importance of the subject and its numerous relations. The paper was accompanied by tables, containing the abbreviated histories of 83 cases of these diseases, and by a number of drawings.

24. *Angina Pectoris.*—At one of the Medical Societies of America, Dr. Samuel Kneeland read an elaborate paper on this severe and comparatively little-understood disease, in which he endeavoured to show that the usually received opinions are not warranted by the post-mortem appearances. He sums up his paper in the following conclusions:

1. Angina pectoris is not a disease of the lungs, heart, or stomach, but an affection of the nerves of these organs.
2. Anatomy, physiology, and pathology, lead us to locate the disease in the par vagum and not in the sympathetic.
3. Like other nerves, the par vagum may be the seat of neuralgia, rheumatism, and inflammation; it may be wounded, compressed, and involved in morbid growths, all which may cause paroxysms of angina.
4. Angina pectoris and asthma are intimately related; the former being an affection of the sensitive and the latter of the motor filaments of the par vagum. Both are usually combined to a greater or less extent.
5. Angina pectoris is not necessarily fatal, especially in young persons, if accurately diagnosticated and properly treated.
6. In addition to the remedies of the books, special attention should be given to the inhalation of oxygen and the application of electricity.
7. In fatal cases, strict examination should be made of the par vagum, at its spinal origin, in its trunk and in its branches—where lesions, sufficient to account for death, will probably be found.*

25. *Pericarditis.*—Dr. Kirkes has investigated the history of this disease with especial reference to the occurrence of adhesions. He finds pericarditis to be a very much more general disease than is commonly suspected, but pericardial adhesion is far from being a common consequence; wherefore he observes that the prognosis is not so unfavorable as is usually thought.

That pericarditis is a very common disease, he presumes from the frequency with which the white patches are met with on the surface of the heart. These patches he believes to be inflammatory, and not the result of simple friction, as maintained by the late Mr. King. Why the disease is not more frequently recognised during life he thinks it is difficult to determine.†

26. *Aneurism.*—The 'Dublin Quarterly Journal'‡ contains an excellent paper, by Dr. Lyons, explanatory of the rationale of the signs by which aneurism is

* Reported in Boston Medical and Surgical Journal, Feb. 1850.
† Medical Gazette, April 6, 1850. ‡ May 1850.

characterised. These he divides into *extrinsic*, or those resulting from the relation of the tumour to surrounding parts; and *intrinsic*, or those derived from the specific nature of the tumour itself. A sub-division of each of these primary classes of signs is made, but, as the communication is of considerable length, we shall content ourselves with the following generalizations adopted by the author. These are:

1. That the phenomena of aneurism available in diagnosis are—*extrinsic*, and the result of eccentric pressure, or of interference with sonoriety; and *intrinsic*, or those which are developed by the motion of the tumour, or by its acoustic properties.

2. That any possible combinations of extrinsic signs are of themselves only sufficient to establish the existence of a tumour, not to determine its nature, and that therefore the study of the intrinsic phenomena becomes of the highest importance.

3. That the impulse and sounds of aneurisms follow those of the heart, at an interval proportionate to the distance of the disease from the heart; and that they are not synchronous with the latter.

4. It is probable that, as a general rule, intra-thoracic aneurism are accompanied by two distinct impulses and two distinct sounds; while abdominal aneurisms, as well as those of the extremities, exhibit only a single impulse and sound.

With these general deductions, the author proceeds to notice those peculiarities of motion and sound which enable us to ascertain, not only the fact of aneurism, but also its nature, whether of the true or false kind. He also notices the peculiarity of the second sound and impulse first announced by Dr. Stokes and M. Gendrin, and criticises the views of Dr. Bellingham, that the phenomena are due to regurgitation in the aneurismal sac. In conclusion, he advances the theory that this peculiarity depends entirely upon the shape of the aneurism, being marked in sacculated tumours, while in those of a fusiform shape the second impulse will be absent, though a second sound may or may not be present, accordingly as the interior of the sac is rough or smooth.*

—An interesting case of true aneurism, springing from the arch of the aorta, has been related by Dr. Bellingham, accompanied by remarks, in which he alludes to the frequent association of aneurism and fatty degeneration of the heart.†

27. *Aorta, Disease of.*—Dr. M'Donnell, of Montreal, has recorded a case of extensive disease of the aorta, consisting in dilatation of the vessel with copious ossification of its coats, many spiculæ of bone projecting into the current of the circulation. The chief symptoms were—cough, dyspnœa, mucous expectoration—constant pain in the lower part of the chest, rendered acute by exertion of any kind, especially by lifting, when a sensation of throbbing in the loins is induced. *Bruit de Soufflet* was heard over the spinal region, but none existed over the heart. There was no pain in the back, dysphagia, aneurismal cough, or loss of the voice. Before death the heart was displaced forwards, the urine became albuminous, and œdema of the extremities occurred.

In the remarks which are appended to the case, the author enters mainly into the difficulties of diagnosis; considering that the question referred to aneurism of the aorta, and thoracic tumour on the one hand; and abdominal aneurism, cancer pylori, cancer of the pancreas, and nervous pulsation on the other. The process of reasoning, by which he came to the diagnosis of

* Dublin Quarterly Journal, May 1850. † Dublin Medical Press, May 9, 1849.

dilatation of the aorta is minutely given, and exhibits an intimate acquaintance with pathology, as well as great logical acumen.*

—Before concluding our references under this section of our Report, we beg to call attention to the admirable lectures published in the 'Medical Gazette," by Dr. P. B. Bellingham ; to Clinical Lectures on Diseases of the Heart, by Dr. Parkes, in the 'Medical Times;' and to Contributions to the Pathology of the Heart, by Dr. Douglas, which appears in the 'Edinburgh Monthly Journal.'

§ IV.—*Diseases of the Chylopoietic System.*

28. *Intestinal Auscultation.*—Dr. Charles Hooker conceives that auscultation may be advantageously used in abdominal diseases, and professes to have had his attention so directed for many years, with an increasing conviction of its usefulness. He says, that "when the ear is applied to the abdominal parieties of a healthy subject, there is heard an almost constant succession of sounds, produced by the motion of the contents of the intestinal canal. These sounds are varied by many causes, such as quickness, regularity, and other variations of the peristaltic action, the degrce of fulness of the intestines, the proportions of the gaseous and other contents, the fluidity of the liquid contents, &c. The sounds, thus varying with the causes of their production, afford indication of these several causes ; and they thus become signs of actions and conditions of the intestines, a knowledge of which is of the utmost importance in investigating the diseascs of these viscera. In most diseases of the intestinal canal, the sounds do not afford definite diagnostic signs to characterise the different diseases, like the diagnostic signs disclosed by auscultation in thoracic diseases. They are chiefly signs of particular conditions or actions, which may occur in various intestinal diseases, rather than diagnostic signs to distinguish different diseases. In some diseases, however, signs are obtained by which their diagnosis can be established.

The author illustrates his views by a reference to Asiatic cholera, in which various sounds are heard, and modifications induced by certain medicines. Thus, he found the noises increased by opium, and small doses of calomel, whilc they were diminished or suspended by large doses ; whencc he regards calomel in large doses as the appropriate remedy. In colic, he states that there are sounds almost characteristic.† The subject is worthy farther study.

29. *Constipation, Prevention of.*—Dr. Mason Warren has written a paper on this subject, the means recommcnded by him being chiefly the use of coarsely-ground wheat as an article of diet. The use of brown bread for the purpose is a well-known resource ; but it is, according to Dr. Warren, infcrior to corn ground coarscly, as by a common coffee-mill.‡

30. *Perforating Ulcer of the Stomach.*—A small pamphlet on this subject has becn circulated by Dr. Edward Young, but we do not find that it contains anything worthy of repetition.

31. *Ascites.*—One of those rcmarkable cases occasionally met with, in which life is prolonged under repeated tapping, is rccorded by Dr. Griffin, of Virginia. Thc patient refcrred to was, in ten years, tapped 186 timcs, and lost 750 gallons of fluid. The case is said to have been ascites, but the history clearly points it out to havc been ovarian.§

* British American Journal, Feb. 1850. † Boston Medical and Surgical Journal.
‡ American Journal of the Medical Sciences, April 1850. § Ibid.

32. *Portal Phlebitis.*—An additional communication on this affection has recently been published by M. Marrotte, founded upon a case in which the branches of the portal vein were found filled with pus. The large intestines were riddled with ulcerations, which the author surmises to have been the origin of the phlebitis. The symptoms were obscure, the chief being those of repeated ill-defined rigors, with pain and fulness of the hypochondria, iclroid skin, &c.*

33. *Gastro-enteric Irritation—Liquor Chlorinii, &c.*—Mr. C. W. Mann states that he has derived great benefit from the use of the liquor chlorinii in irritation of the alimentary canal. The dose is from one to three drachms.†

§ V.—*Materia Medica and Therapeutics.*

34. *Anæsthesia considered generally as a Therapeutic Agent.*—Several works have recently been published, which it had been our intention to analyse, but we found our allotted task so admirably done by M. Aran, in the 'Archives Générales,' that we consider we shall best consult the interests of our readers by giving a condensed translation of the communications to which we refer.

The works which the author notices are the following:

I. *On Anæsthesia, and Anæsthetic Substances generally.* By Mr. Nunneley. (Transactions of the Provincial Medical and Surgical Association.)

II. *On Narcotism, by the Inhalation of Vapours.* By Dr. Snow. (Medical Gazette, 1848-9.)

III. *Traité Théorique et Pratique de la Méthode Anæsthetique appliquèe à la Chirurgie, &c.* Par M. Bouisson. 8vo, pp. 560. Paris, 1850.

IV. *De l'Emploi de l'Ether Sulfurique et du Chloroforme à la Clinique Chirurgicale de Nancy.* Par Dr. Simonin. Paris, 1848.

V. *De l'Emploi des Moyens Anæsthetique en Chirurgie.* Par Dr. Courty. Montpellier, 1849.

The author commences by remarking that all discoveries pass through two stages of probation, one of research and analysis, another of retrospection and generalization. Anæsthesia, he observes, has passed the ordeal; it has had its period of patient investigation, and it is only after triumphing over ill will on the one hand, and the blunderings of ignorance and routinism on the other, that it has been established as a scientific fact. Now it has also seen its second stage, in which the various facts, which have slowly accumulated, have been methodised and generalised. For the latter step in its history, the author considers that we are mainly indebted to Mr. Nunneley, in this country, and M. Bouisson, of Montpellier.

In the following observations, the author arranges his paper upon the plan adopted by the first-named writer, and which consists in the enumeration of six main questions or propositions, viz.:—

1. *Whether there be a variety of anæsthetic agents; and, if so, if there be any property common to all.*—Among those who have sought to solve this question, Mr. Nunneley and Dr. Snow are pre-eminent. The latter having the honour of precedence in the inquiry. Volatility appeared to him to be the chief condition proper to anæsthetic substances, but it is not the only one. It was also found that it was necessary that the substance should be sparingly soluble in the serum of the blood, if the contrary were the case, but feeble anæsthetic effect was produced, however volatile the substance might be.

* Revue Medico-Chirurgicale, Mars 1850. † Medical Gazette, May 24.

This explains the superiority of chloroform over ether, this latter dissolving readily in the serum, the former being only very sparingly soluble.

Mr. Nunneley has ascertained that anæsthetic substances have the following properties:

1. They all contain carbon. 2. The combination of carbon with hydrogen or chlorine forms the best compound, and the anæsthetic effect is proportionate to the larger amount of carbon in relation to the hydrogen; so that if we could obtain a pure liquid hydrocarbon composed nearly of equal quantities of the two principles, and readily volatile, we should possess the most certain and the least dangerous anæsthetic. 3. Hydrogen and carbon may unite as a radical with oxygen, chlorine, iodine, bromine, &c., to form anæsthetic substances. Some of these may unite with acids without entirely losing these properties. Such are the oxyde of ethyle, nitre, chlorine, and hydrochloric ethers. 4. Of these ternary compounds, the most active are those which have the third element in small proportion. Mr. Nunneley concludes that the action of all true anæsthetic agents, whether carbons or hydrocarbons, simple or combined, is essentially the same.

II. The second question is, *What is the mode of action of anæsthetic substances?* Upon what structures do they act, what changes do they induce, and what are their physiological effects? This is the question which has occupied most of the attention of practitioners. Mr. Nunneley answers it as follows:

1. The action of anæsthetic agents is immediately and primarily upon the nerves. The heart, respiration, circulation, and the blood, are secondarily affected.

2. These agents all in the first instance act as stimulants, this action being however different in degree; with chloroform it is comparatively little; with ether, aldehyde, and in some others, it is more considerable.

3. The action is at first local. When applied to a limited portion of the body, that portion is rendered anæsthetic. It is proved by experiment that a limb may be made insensible to pain without loss of general consciousness.

4. Though anæsthetic action is upon the nerves, it is not primarily upon the sensorium, but upon the peripheral expansions of the nerves. Hence the rationale of its greater power by inhalation, a larger superficies of nerve tissue being thus acted upon.

III. *Is there any anæsthetic which should be preferred, on account of the greater completeness of its temporary effects, as well as harmlessness of its more permanent effects?* This is Mr. Nunneley's third question. Of all the varieties of anæsthetic substances, two only have occupied attention—viz., ether and chloroform, but others have an indisputable power. Mr. Nunneley names seven, as being entitled to consideration. These are, ether, coal gas, chloric ether, hydrobromic ether, chloroform, and chloride of olifiant gas. It will best answer our purpose, however, to give his opinion of ether and chloroform only.

Of ether he observes that is uncertain, apt to produce excitement, and leaves headache; but it is little liable to induce collapse and other dangerous symptoms.

Of chloroform he says, that it is one of the most powerful of the class; but not the safest, on the contrary the most dangerous of all.

Mr. Snow has shown that the *chloride of carbon* is not so irritating as has been represented, but that it is not more powerful than sulphur in ether.

M. Bouisson appears to participate in the dread of chloroform, considering ether preferable in weakly subjects, and in those with strong tendencies to

asphyxia or syncope. He also prefers it in operations requiring a length of time for performance, and in children.

IV. The fourth question is, *Is there any essential difference* in the action of these substances, according to the mode of exhibition? *and is the action constant for the same dose and mode of exhibition?* No one is better calculated to reply to this question than Mr. Nunneley, who has experimented not only by inhalation, but by injections into the bowels and veins, and by local applications. The result is that, with the exception of hydrocyanic acid, all act more energetically when inhaled, or introduced into the circulation, especially the latter. Used in this way, five drops of chloroform sufficed to induce insensibility, and ten to destroy life.

With regard to the uniformity of action, it may be stated that the same dose is far from producing constant effects, even in the same individual. Mr. Nunneley finds that young animals bear a proportionably larger dose than adults. Hysterical females are peculiarly susceptible.

The quantity of any anæsthetic inhaled is a matter of the utmost importance. *Cæteris paribus*, danger is proportioned to the concentration of the vapour.

We may here notice that M. Bouisson is directly opposed to Mr. Nunneley in reference to the greater tolerance of anæsthetic substances by the young.

Mr. Nunneley suggests, in order to secure the greatest chances of safety, that the inhalation should be gradual, and that air should be allowed to mix freely with the vapour, he prefers a handkerchief. To these precautions M. Aran adds the horizontal posture, and an empty state of stomach.

V. *Are there any symptoms by which we may measure the effect of anæsthetic agents, and judge as to the presence or freedom from danger?* The first sign that an animal is completely narcotised is seen in the breathing, which becomes deep, full, and long. This, however, is not constant. Sometimes there is excitement, the pulse becomes full and frequent, the pupils contract, and some delirium ensues. These symptoms speedily disappear, and are replaced by immobility; the eyes rolled upwards, pupils dilated, pulse small, and consciousness extinct.

If the quantity of vapour be diminished the breathing becomes more free; if not, it becomes laborious, and may cease. The lips close, and expectoration is attended with a peculiar sound, which Mr. Nunneley regards as a certain indication of danger. At this point, or before the pupils are widely dilated, the limbs become flaccid, the urine and fæces may escape, and the face becomes bloodless. The heart acts rapidly, and the respiration becomes slow and gasping. If this stops for any time, even though the heart continues to pulsate, recovery will be doubtful.

VI. *In case of an overdose of an anæsthetic substance, what are the best means of counteracting its effects?* The unfortunate instances of death which have occurred by inhalation have shown too plainly that we are all but powerless to prevent the fatal event. Mr. Nunneley states distinctly that we have no antidote. Cold effusion, perhaps galvanism, and other stimulants may expedite recovery when the depression is not too profound; or venesection may relieve the heart when it has not ceased to act. Upon the whole he seems to think that where the powers of life are not reanimated by the cold douche, fanning, and such like simple measures, the case is too far gone for recovery.

M. Bouisson has some interesting remarks on the antagonism of ether and strychnine, but the facts are too few to allow of confidence. Among the most important remarks of the same writer may be classed the corroboration of

Professor Simpson's statistics, showing the greatly lessened mortality in severe surgical operations when anæsthesia is induced as compared with former experience.

—We have but little to add on the subject of anæsthetic substances. In consequence of the danger which occasionally attends the use of chloroform, Dr. Mason Warren has suggested the substitution of chloric ether, as capable of inducing profound insensibility without the risk which attaches to the former. He has advocated his views in a pamphlet with which he has favoured us, and also in the "American Journal of the Medical Sciences."

—In order to obviate the tendency to death from an overdose of chloroform, M. Ricord advises the immediate inflation of the lungs by applying the mouth to the patient's lips.

—As cases of death have been reported, in which chloroform has been stated to have been used with criminal interest, it is rendered necessary to examine the blood for the detection of the substance. When exposed to a red heat chloroform is decomposed with chlorine and hydrochloric acid, and by this means we are furnished with a process for its detection. For this purpose thirty scruples of this fluid at least will be required to operate on. The blood, if possible, should be examined as soon as it is drawn from the vein. It is placed in a bottle stopped with a cork, supporting a curved tube, which latter is heated by a spirit-lamp. Into the end of the tube is introduced a bit of paper covered with paste, to support some iodide of potassium. The bottle is now placed in boiling water. The chloroform is volatilized, and is decomposed while traversing the heated part of the tube. The iodide of potassium, again, is decomposed by the free chlorine; and the iodine, in its turn, being set free, acts on the starch of the paste, and gives the characteristic blue colour. M. Ragsky, the author of this method, assures us that it will detect an hundredth-thousandth part of chloroform in the blood. The intensity of the blue colour, arising from the action of the free iodine on the starch, will give some measure of the quantity of chloroform.

—Dr. Snow exhibited at a recent meeting of the Westminster Medical Soeiety, the apparatus which he used for detecting the presence of chloroform in the dead body. He said that the process was a modification of one described in the 'Journal de Chimie Médicale' for March, 1849. The blood or portion of the body to be examined was put into a flask, from which there proceeded a tube, which was made red-hot in part of its course. Another glass tube, attached to the extremity of the latter, was moistened inside with a solution of nitrate of silver, and terminated in a Wolfe's bottle, the interior of which was also moistened with the same solution. Heat being applied to the flask by means of the chloride of calcium bath, the vapour given off had to pass through the red-hot tube, and any chloroform which might be present was decomposed, and the chlorine and hydrochloric acid gas being set free, were arrested in the next tube, where they formed a white precipitate of chloride of silver, which became rapidly darkened in colour by the action of light. The nature of the precipitate could be further proved by cutting the tube with a file, and introducing a drop or two of nitric acid into one portion, and of solution of ammonia into the other. He had distinctly detected the presence of chloroform by this process in two kittens, killed by inhaling the vapour, on six successive days after the death of the animals, although no precautions were taken to protect the bodies from the air, and the quantity inhaled by each kitten must have been less than one minim. The parts of the animals examined were the viscera of the chest and abdomen,

the brains, and the muscles of the body and extremities. From all these parts, clear evidences of the presence of chloroform were obtained. He had also obtained a precipitate of chloride of silver by operating on some portions of the muscles taken from the leg of a child amputated under the influence of chloroform at St. George's Hospital. The process indeed was one of such delicacy that he had been able to clearly detect the presence of the hundredth part of a grain of chloroform when dissolved in a thousand grains of water. The only substances which could yield chloride of silver by this method, were Dutch liquid, chloride of ethyle, and some other bodies similar in composition and effects to chloroform, and which, however, were not in common use, or even kept on sale. There were chlorides in the human body, but these could not be decomposed below a red-heat, and certainly not till the part became dry; whilst in the process he employed, the heat to which the part under examination was exposed, was only that of boiling water, or a very little more, and it could not become dry in the most protracted examination, as the greater part of the moisture given off became condensed in the tube, which inclined upwards, and flowed back into the flask. The method, therefore, was liable to no fallacy or objection. He had received from Mr. John Parrott some portions of the viscera of a woman lately found dead under very mysterious circumstances in the Wandsworth Road. The parts had been closed up air-tight from the time they were taken from the body. They included a portion of the brain and of the liver, and though they were kept boiling for two or three hours in their own serosity, not the least trace of chloride of silver was obtained, whilst in the instances where chloroform had caused death, the precipitate began to appear when the heat to which the part was exposed reached to about the boiling point. In the muscle taken from the child's leg, the chloroform was only a few minutes longer in being detected, although the quantity present must necessarily have been much less than in a case where death had been caused by it. He therefore concluded that the death in the Wandsworth Road could not have been occasioned by chloroform.*

[For later experience of the use of chloroform in obstetrics see the Report on Midwifery in the present volume.]

35. *Purification of Chloroform.*—Dr. Gregory has read a paper before the Royal Society of Edinburgh on the purification and properties of chloroform, which may be recapitulated under the following propositions:

1. Chloroform has been prepared both from alcohol and wood-spirit. The latter has been used for the sake of cheapness; but as it is a mixture of several liquids, all of which do not yield chloroform, it gives an impure product, in a proportion which varies much, but is always below that obtained from alcohol. There is therefore not only no advantage, but the contrary, in using wood-spirit, which is not, after all, much cheaper than alcohol.

2. But the chloroform from these two liquids, *when fully purified*, is quite identical in all its properties. Its smell, density, boiling-point, and action in the system, are in both cases exactly the same. That from alcohol is no doubt more easily purified than the other, but it also contains certain volatile oily impurities, which must be removed before it can be safely used. The peculiar oils which adhere to both kinds of chloroform are not identical, or at least not all identical, but they are of analogous constitution and properties.

3. Soubeiran and Mialhe have examined these oils. They contain chlorine, have a disagreeable smell, and when inspired or smelt, cause distressing

* Medical Times, Dec. 1849.

headache and sickness. In the case of wood-spirit, some of its own impurities distil over unchanged, and are also found in the chloroform.

4. It is well known that many persons, after the use of chloroform, have suffered from headache, nausea, and even vomiting, as I have more than once seen. Headache and nausea I have myself often experienced, when I have tried different specimens of chloroform, without taking so much as to produce the full effect.

5. Perfectly pure chloroform does not, so far as I have seen or experienced, produce these disagreeable effects. It is therefore highly probable that when they occur, as they do with some individuals, from the use of chloroform of more than the average goodness of quality, they depend on the presence of a trace of these poisonous oils.

6. All good manufacturers of chloroform purify it by the action of oil of vitriol, which destroys the oils, while at the same time a part of the acid is reduced to sulphurous acid. The chloroform, to remove this, is then distilled with lime or carbonate of baryta, and is tolerably pure if the process be well conducted.

7. But it is not quite pure, and contains a trace, more or less distinct of the oils. I have found this to be the case with all the best chloroform made here up to 1849; and I have several times seen headache and sickness from the use of such chloroform, which was the best anywhere made. I must add, however, that the quantity of oils in the chloroform of the best Edinburgh manufacturers, although variable within certain limits, was always so small, that that product was fit for use, and only caused headache, &c., in a few peculiarly sensitive persons.

8. It was desirable to have a test for these impurities, as well as an easy and effectual mode of removing the last traces of them, especially as many sorts of chloroform not made here were far inferior in quality to that prepared in Edinburgh. One very delicate test is, that of oil of vitriol, which should be quite colourless, pure, and of the full density of 1·840 at least, as it may be obtained by Mr. Kemp's process, lately read to the Royal Society; when agitated with the chloroform, it becomes yellow or brown, from its action on the oils, which it chars and destroys. Any change of colour is easily seen by contrast with the colourless chloroform which floats above. Pure chloroform gives no colour to the acid. It is essential that the oil of vitriol be colourless and also of full density; for if coloured, it is not easy to see a slight change on its colour; and if below the proper density, that is too weak, it is not much coloured by a chloroform which will render dark-brown the acid of proper strength.

9. Another test, still more delicate, I find to be the smell of the oils. When chloroform is poured on the hand or on a handkerchief, it rapidly evaporates; but the oils being less volatile are left behind; and their smell, previously covered by that of the chloroform, is easily recognised. Until very lately no chloroform was sold, or indeed known, which would stand this test, or even the former.

10. Up to 1849 the best commercial chloroform had a specific gravity of 1·480, which was considered a guarantee of its purity; but it had been obtained by chemists of specific gravity 1·494, and even 1·497. I have found that chloroform of 1·480, when once more acted on by oil of vitriol, which destroys the oils and becomes brown, may be obtained, after removing the sulphurous acid, of specific gravity 1·500 at 60°. This I take to be the specific gravity of pure chloroform. Our best makers have lately, much to their credit, pushed the purification so far as to furnish chloroform even of this highest density, and also in other respects such as it ought to be.

11. There are still, however, many makers in other places whose chloroform is not so pure; and I shall now describe the method which, with Mr. Kemp, I have employed for purifying, perfectly and easily, any commercial chloroform, except one remarkable specimen, a process which will enable any medical man to purify it for himself with the greatest facility.

12. The chloroform, having been tested as above, and found more or less impure, is to be agitated with oil of vitriol (half its volume will be sufficient), and *allowed to remain in contact* with the acid, of course in a clean, dry, and stoppered bottle, and with *occasional agitation* till the acid no longer becomes darker in colour. As long as the action is incomplete, there will be seen, after rest, at the line of contact, a darker ring. When this no longer appears, the chloroform may be drawn off, and for greater security once more acted upon by a quarter of its volume of the acid, which should now remain colourless. It is now to be once more drawn off, and in a dry stoppered bottle mixed with a little powdered peroxide of manganese, with which it is gently agitated, and left in contact until the odour of sulphurous acid is entirely destroyed, and the chloroform has acquired a mild, agreeable, fruity smell. It has then only to be poured off into a proper phial. It will now leave no disagreeable smell when evaporated on the hand. (If the commercial chloroform, after having been *frequently well shaken* and *left for some time in contact* with the acid, has given to it only a moderate tinge of colour, it is probable that it may be completely purified by the first process. To ascertain this, test a fresh portion in a tube with fresh acid, shaking well and allowing it to stand for some time. If it do not colour the acid at all, then the whole chloroform has only to be finally purified by the oxide of manganese. If the acid become coloured in the test-tube, it will be as well to act on the whole chloroform a second time with fresh acid till it stands the test. Mr. Kemp has observed, in repeating this process for me, the very curious fact that, as soon as the action is complete, and the oily impurities are destroyed, but not sooner, the chloroform tested with the acid in a tube exhibits a strongly convex surface downwards, where it rests on the pure acid, or, what is the same thing, the acid becomes concave at its upper surface. The smallest trace of impurity, not sufficient to affect the density of the chloroform, we have found to render the line of junction horizontal. It is probable that this may become a valuable test of the perfect purity of chloroform; but we shall not say more on this subject until we have thoroughly examined it.) This process requires no apparatus beyond a few stoppered bottles and a *pipette*, if we wish to draw off the whole chloroform without loss, although nearly the whole may be simply poured off. The use of the oxide of manganese is due to Mr. Kemp; and on the large scale the chloroform may be filtered through a cylinder full of it. In this final purification of commercial chloroform, no distillation is necessary; indeed, no rectification is required at all, if it be well washed with water before using the acid.

13. It may be considered as certain, that the use of chloroform thus purified will very rarely, if ever, cause the disagreeable effects above noticed. As to more serious bad results from the use of chloroform, so often spoken of elsewhere, it is enough to state that a large proportion of the cases must be attributed to the use of a liquid so impure as hardly to deserve the name of chloroform at all.

That this neglect proceeded more from ignorance than from intention is, I think, plain from the fact, that a specimen labelled "Pure Chloroform" actually contained only a trace, about 1-30th, of that substance. I did not ascertain its specific gravity, which must have been far lower than 1·200 or 1·100—nay, possibly under 1·000, because its impurity was so obvious in

every other respect, and the quantity I had was too small; but, on examining it further, I am convinced that its origin was this:—The maker, after distilling the materials, obtained, of course, two liquids, a lighter and a heavier. He evidently *did not know* that the latter was the chloroform, and therefore threw it away, and preserved the *lighter*—a mixture of pyroxilic spirit—of its natural impurities, of the deleterious chlorinated oils and a *trace* of chloroform. At least, such are its characters; and it exactly resembles what would be obtained in the way supposed. But what a fearful degree of ignorance (without any evil intention) is here exhibited! And yet this maker was free to produce and sell *pure chloroform*, which was actually almost *pure from chloroform*, and loaded with deleterious agents.*

36. *Cod Liver Oil.*—A very comprehensive treatise on the history and uses of this now popular medicine, by Dr. De Jongh, requires notice. This is a pharmaceutical rather than a therapeutical treatise, but it nevertheless contains much valuable information. The author admits three varieties of cod liver oil. The ol. jecoris aselli *fuscum*, which is dark-brown; the *subfuscum*, which is of a light-brown colour; and the *flavum*, which is of a clear golden yellow. This difference depends on the process used in their extraction. The analysis of De Jough, which is the most accurate and minute which has hitherto appeared, we append.

100 *parts of Cod Liver Oil contain*

	Brown.	Light-brown.	Pale.
Oleic acid, with brown substance (Gaduine), and two peculiar bodies	69·78500	71·75700	74·03300
Margaric acid	16·14500	15·42100	11·75700
Glycerine	9·71100	9·07300	10·17700
Butyric acid	0·15875	—	0·07436
Acetic acid	0·12506	—	1·04571
Fellic and cholic acids, with some oleine, margarine, and bilifulvin	0·29900	0·06200	0·04300
Bilifulvin, and bilifellinic acid, and two peculiar substances	0·87600	0·44500	0·26800
A peculiar substance, insoluble in alcohol of 30 degrees	0·03800	0·01300	0·03600
A peculiar substance, insoluble in water, alcohol, and ether	0·00500	0·00200	0·00100
Iodine	0·02950	0·04060	0·03740
Chlorine, with some bromine	0·08400	0·15880	0·14880
Phosphoric acid	0·05365	0·07890	0·09135
Sulphuric acid	0·01010	0·08595	0·07100
Phosphorus	0·00754	0·01136	0·02125
Lime	0·08170	0·16780	0·15150
Magnesia	0·00380	0·01230	0·00880
Soda	0·01790	0·06810	0·05540
Iron	a trace	—	—
Loss	2·56900	2·60319	3·00943
	100·00000	100·00000	100·00000

* Monthly Journal of Medical Science, May 1850.

A comparison of these tables shows a considerable difference in the three ores. The lighter kinds are shown to be richer in inorganic ingredients, iodine included, than the dark. This latter, on the contrary, contains more of the organic ingredients, such as the components of bile, butyric and acetic acid.

De Jough is diffuse on the subject of the diseases in which cod liver oil is useful, but these may be chiefly reduced to manifestations of two diatheses, the rheumatic, and the scrofulous or tubercular. In chronic rheumatism, rheumatic neuralgia, especially in enfeebled and wasted habits, we can corroborate, from our own experience, the author's assertion, that there is no remedy of greater efficacy. In all varieties of scrofula, also, it possesses powers which no other can lay claim to.

In phthisis it must be considered, after the excellent Report of the Brompton Hospital, noticed in our last volume, as the only medicinal agent from which any permanent or even temporary benefit is to be expected. That it is capable of doing much in the earlier stages of this hopeless malady daily experience amply proves, and the various journals have recently borne repected testimony to the same fact.

It has been stated by Dr. Duncan and Mr. Nunn, of Colchester, that vegetable oils are capable of affording equally satisfactory results with cod liver oil in phthisis, and cases are adduced by these gentlemen which appear to justify their conclusions. We have no opinion to offer on the point, but as it is not yet satisfactorily ascertained whether the benefit which is derived is not due to the fatty principle, it is but just that the suggestions of Dr. Duncan and Mr. Nunn should be followed out. The expense of cod liver oil renders it desirable that a cheaper substitute should, if possible, be found.

Dr. Bagot has endeavoured to show that other fish oils are equally beneficial with those extracted from the cod.*

37. *Arsenic.*—Among the many advantages which have accrued from the proceedings of the Provincial Medical and Surgical Association, not the least is the endeavour to concentrate the experience of a body of upwards of two thousand members of the profession, upon questions of a doubtful but interesting nature. In this praiseworthy attempt, Mr. Hunt has much distinguished himself, and not the least so in the inquiry we have now to notice on the "Medicinal Action of Arsenic." To those of our readers who are not members of the Provincial Association, it may be necessary to state, that in accumulating the information which he has been enabled to acquire, Mr. Hunt was at the pains of addressing a certain number of queries to each member. These were freely responded to, but for all practical purposes the following digest will be sufficient.

1. The most important point ascertained by this inquiry is, that arsenic is *a safe medicine;* none of the respondents having found it permanently detrimental. When given in a judicious manner, it did not even induce serious temporary effects. In the few cases apparently leading to a contrary inference, there was sufficient evidence of ignorant administration, or injudicious perseverance on the part of the patient. The inquiries elicit a vast difference of opinion as to the proper dose to commence with.

2. As respects the action of arsenic, it appears that it varies more than any other mineral; this has been noticed in poisonous as well as in medicinal doses.

3. The third question relates to the forms of disease in which arsenic has proved useful. The replies show that its powers are chiefly manifested in chronic non-contagious skin diseases; next to these come intermittent and

* Dublin Medical Press, March 6, 1850.

neuralgic maladies. In the former, the experience of many proves that, combined with quinine, it rarely fails.

4. The third question inquires the circumstances which justify or contra-indicate the use of arsenic. To this it is replied, that arsenic should not be given when other medicines will answer the purpose, and that a passive state of system is more favorable than the reverse.

5. The signs of an over-dose are stated, by the majority of the respondents, to be conjunctivitis, irritation of the mucus membranes, desquamation of the entrails, &c. The information given under this section is vague.

6. When an overdose has been given, Mr. Hunt advises that the dose should be diminished, and not that the medicine should be altogether omitted, as is commonly done.

Some other questions are replied to, but the above brief abstract includes the chief points of interest in the Report.

38. *Adulteration of Drugs.*—Fraud of one kind or another appears to be as frequent among chemists and drug manufacturers as in other trades, and next to the sophistication of food, there is nothing which, in our opinion, more completely deserves reprobation. It appears, from the pages of the 'Pharmaceutical Journal,' that there is going on, to a great extent, the system, not of adulteration only, but of the wholesale substitution of comparatively worthless compounds, for valuable and powerful medicinal agents. Within the last few years compounds of valerianic acid with oxide of iron, with oxide of zinc, and with quina, have been introduced into medical practice as efficacious remedies, especially in hysteria, and other affections of the nervous and uterine system, and in fevers. A good deal of attention has been devoted by practical chemists to the preparation of these valerianates, and several processes for making them have been published in this and other Journals. The valerianates, however, have always, and necessarily, been expensive preparations, yet the use of them has been gradually extended in consequence of the testimony borne to their great efficacy. Increased demand led to competition in the supply, which has recently resulted in the adoption, by some manufacturers, of a system of substitutions that would have speedily brought a valuable set of remedies into disrepute, had not the fraudulent practice been detected.

Citrate and tartrate of iron, flavoured with a few drops of oil of valerian, has been extensively supplied for valerianate of iron; and acetate of zinc, flavoured in the same way, has been substituted for valerianate of zinc; and these spurious compounds have been sold at prices which, although defying competition on the part of the genuine valerianates, have nevertheless been twenty or thirty times greater than the commercial value of the substituted articles. For valerianate of quina the disulphate of that base, with a little oil of valerian to disguise it, has been in like manner substituted.

Thus compounds have been supplied for the three medicinal valerianates, which have not contained a particle of the most important of the constituents which should have been present, namely, the valerianic acid.

Such being the nature of the frauds which have been practised, we have no doubt, upon many of our readers, we proceed to point out the means of detecting them.

1. *The true valerianates* have a sour, disagreeable, and very persistent, although not powerful smell, which is essentially different from that of oil of valerian.

1. *The spurious imitations* being flavoured with oil of valerian, smell strongly of that substance.

2. *The true valerianate of iron* is almost entirely insoluble in water; and the valerianate of quina fuses into oily globules in boiling water, and dissolves with difficulty. They are both freely soluble in spirit.

2. *The spurious valerianate of iron* is perfectly soluble in water, especially when aided with a little heat; it is insoluble in spirit. *The spurious valerianate of quina* is soluble in about thirty parts of boiling water, and, as the solution cools, it is deposited in acicular crystals, which have the bitter taste and other characters of disulphate of quina.

3. *The true valerianates* when mixed with a little diluted hydrochloric acid, are decomposed, and the valerianic acid being set free, rises like oil to the surface of the liquid. To get this character it is necessary to operate upon from five to ten grains of the specimen, and to avoid the use of too much of the diluted acid, as valerianic is soluble in about thirty parts of water. The liberated valerianic acid has the sour, disagreeable, and very persistent smell, which to a slight extent is perceived in its salts, but it is readily distinguished from that of oil of valerian.

3. *The spurious valerianates*, when added to water, will generally yield a thin film of oil, which floats on the surface, and is easily detected as oil of valerian. On heating the liquid this oil is driven off, without otherwise decomposing the salt, and no further indication of valerian will afterwards be obtained. On treating them with diluted hydrochloric acid there is no valerianic acid set free.

4. *The true valerianates*, when mixed with a little proof spirit, and one fourth the volume of oil of vitriol is then carefully added, will yield valerianic ether, which is recognised by its agreeable fruity smell, somewhat resembling that of the pine-apple. This ether can hardly be distinguished in smell from butyric ether.

4. *The spurious valerianates* yield no valerianic ether; but the *spurious valerianate of zinc*, when treated as above, yields acetic ether, which is easily detected.

The foregoing tests are sufficient to distinguish the true valerianates from the spurious substitutes above mentioned, but there is reason to believe that other substitutions have been practised, although not so extensively. We have met with a specimen of so-called valerianate of iron, which is evidently not what its name indicates, and yet it contains neither citrate, tartrate, nor acetate. It is in the form of a brown powder, insoluble in water and in spirit. It smells of valerianic acid, but on being decomposed with hydrochloric or sulphuric acid, yields no appreciable quantity of the oily product. We have not had time to submit this specimen to a careful examination, but it is easily distinguished from the true valerianate of iron by its being insoluble in spirit, while the latter dissolves freely in this menstruum, even without the application of heat. This suspected specimen is also distinguished from the genuine by its behaviour when heated in a platinum crucible.

The true valerianate, if carefully heated, fuses, gives off valerianic acid undecomposed, then as the heat is increased, burns with a luminous flame, and emits a very offensive odour.

The suspected specimen does not fuse or give off any appreciable quantity of valerianic acid. The vapour does not readily inflame, and the odour emitted is not offensive.

The residue of oxide of iron is the same in both specimens, namely, 25 per cent., and the acid originally present is organic.

Where mere adulteration is practised, the detection of the fraud is much more difficult than it is in the cases to which we have hitherto alluded, the cupidity of the manufacturer having fortunately, in these cases, blinded his discretion, so that a speedy exposure of the practice was inevitable.

About three years ago, as we find from the 'Journal de Pharmacie,' much of the valerianate of zinc met with in Paris was found to have been made with butyric acid, instead of valerianic acid. The butyrate thus substituted was of a more beautiful and crystalline appearance than the true valerianate, but it did not essentially differ in character, and the detection of the fraud, by satisfactory tests, was not easily accomplished. A paper was published on the subject by Messrs. Laroque and Huraut, in which they recommend the use of a concentrated solution of acetate of copper for distinguishing valerianic from butyric acid. In the use of this test, however, it is necessary, in the first place, to eliminate the acid by adding sulphuric acid to the salt and separating the volatile acid by distillation. When butyric acid is added to the concentrated solution of acetate of copper, a bluish white precipitate is immediately formed; but on adding valerianic acid in like manner, there is no immediate appearance of precipitation or turbidity of the liquid, but on shaking it, oily drops, of a greenish colour, separate, partly rising to the surface, and adhering to the sides of the vessel, and partly falling to the bottom. These oily globules consist of anhydrous valerianate of copper, which retains this condition sometimes for twenty minutes or more, but it ultimately becomes hydrated, and then forms a bluish green crystalline powder.

II.

REPORT ON THE PROGRESS OF MIDWIFERY AND THE DISEASES OF WOMEN AND CHILDREN.

BY THE EDITOR.

The bibliography in this department of medicine during the past six months is unusually scanty. There is, in fact, but one book of note which we are called upon to notice, namely, that by 'Dr. Tilt on the Diseases of Menstruation and Ovarian Inflammation.'*

The subject matter of this volume first appeared in the 'Lancet,' 1849, and portions of it have, from time to time, been transferred to our pages. The major part of this series of papers have been here collected, and, with certain additions, have formed a treatise of great merit, and calculated to afford very valuable information upon points connected with uterine pathology, hitherto insufficiently studied.

In his introduction Dr. Tilt propounds certain questions, pointing out in his replies what he deems to have been a prominent cause of uncertainty in medicine, and a want of precision in medical nomenclature. He then shows the numerous conditions which may be included under the several terms—amenorrhœa, leucorrhœa, menorrhagia, &c. He next considers the physiology of menstruation, and endeavours to reconcile the aberrations of this function with the ovular theory of the day, and determines that the ovaries are the organs permanently concerned in the function itself.

The main contents of Dr. Tilt's volume are distributed through nine chapters, preceded by prefatorial remarks on the comparative ignorance of the profession respecting the acute disorders of the ovaries, together with rules for the exploration of these organs. The nine consecutive chapters are occupied with the symptoms and pathology and treatment of subacute and acute ovaritis. The former he shows to be the most frequent cause of the disorders of the menstrual function.

We have in this volume a fund of practical information; the more important, because the part played by the ovaries in the various phases of female life has been too much overlooked, attention having been directed almost exclusively to the womb, or at least only to ovarian cysts and other forms of chronic disease. Physiology should have long ago taught us that organs so important to the female economy would necessarily be subjected to frequent derangement; but as that knowledge had previously been imperfect, we are greatly indebted to Dr. Tilt for the present well-written and in every respect valuable contribution.

§ I.—*Anæsthesia in Midwifery.*

In continuation of the discussions which have from time to time been raised upon this subject, we have in the present Report to notice an Essay by

* On Diseases of Menstruation and Ovarian Inflammation in Connexion with Sterility, Pelvic Tumours, and Affections of the Womb. By Edward John Tilt, M.D. London: Churchill, 1850.

Dr. MURPHY, premising that the author's reputation as a careful and scientific obstetric practitioner entitle his observations to be received with attention. After detailing a considerable number of cases, Dr. Murphy continues the subject by propounding certain questions. The first of these is:

Does chloroform paralyse the uterus?—An examination of his cases enables him to answer this in the negative; nor was the conclusion drawn from instances of natural labour only, but also from cases of operative midwifery, in which the anæsthetic state was profound. He does not deny that the pains may be suspended by chloroform, but as he remarks, they return, and often with increased power, as soon as the anæsthetic state subsides, which is altogether a different thing to that of paralysing the uterus. These sentiments he more distinctly enumerates under the following deductions:

1. Chloroform does not impair the contractile power of the uterus, neither does it interfere with the action of the uterus, unless it be given in very large doses, or the patient be very susceptible of its influence.

2. The full anæsthetic effect of chloroform may be produced without paralysing the uterus. The intervals between the pains may be lengthened, or the pains may be suspended, without loss of power. On the contrary, in such instances, when the chloroform is withdrawn, the uterine contractions instantly return with renewed force. The renewal may occur while the patient is under the influence of chloroform.

3. Whether the action of the uterus be temporarily suspended by chloroform, whether it be increased or not interfered with—in every case where the patient had previously suffered agonising pains, and her labour was making unfavorable progress, chloroform has produced a salutary change in restoring the proper action of the uterus.

4. The effects which indicate want of power in the uterus, viz., great protraction of labour, hemorrhage, retained placenta, &c., have not been found to be the results of chloroform; on the contrary, where these conditions have been observed, there were causes quite adequate to explain them, independently of the chloroform.

5. A degree of anæsthesia sufficient to remove the intensity of the pain, without interfering with consciousness, does not interrupt the action of the uterus.

The second question, *Whether the safety of the child is hazarded by the administration of chloroform?* needs only a brief answer in the negative. Its harmlessness in this respect is sufficiently proved, by the non-increase of infant mortality in cases delivered under anæsthetic influence.

The third question propounded by the author is, *Whether any ill effects subsequently manifested themselves, by which the patient's safety was compromised?* To this he replies that his own experience accords with that of Dr. Denham, Dr. Channing, and others. He has not met with a single instance in which the inhalation of chloroform has been the cause of ill effects, and does not hesitate to deny that it has ever been the cause of death in obstetric practice. In justification of this opinion, he criticises unsparingly, but not with more severity than they deserve, the illogical assertions of some of the opponents to chloroform. At the same time, he does not deny, that fatal consequences have ensued in surgical practice, in which a deeper anæsthesia has been thought necessary; he defends it from the charge only in reference to obstetric practice. A similar negative is given to the assertion of Mr. Gream, that the inhalation of chloroform is apt to give rise to indecent expressions and actions. The Essay terminates with rules for its exhibition, but as these offer no novelty, we omit them.*

* Monthly Journal of the Medical Sciences, Dec. 1849.

—Dr. Henry Bennet has likewise recorded his experience of chloroform, and which is altogether favorable. He states that he continues to exhibit it in four classes of cases: 1, in irregular but natural labour; 2, in operative labour; 3, to facilitate operations in the uterus; 4, to subdue uterine pain in dysmenorrhœa.

1. He seldom resorts to anæsthesia in natural labour, unless it be to facilitate the extrication of the head, or to quiet some of the nervous excitement which frequently interferes with the progress of the labour. He does not advise it simply to allay pain.

2. In operative midwifery he has derived great assistance, in retained placenta, turning, craniotomy, &c.

3. In uterine explorations Dr. Bennet has frequently found it useful to narcotise the patient, especially when, as is sometimes the case, the soft parts are so acutely sensitive that the slightest contact is painful.

4. In dysmenorrhœa he has found it useful both by inhalation and internally. In the latter case twenty drops are given in mucilage.*

—Dr. Rigby is satisfied that a sufficient immunity from suffering may be attained without annihilating consciousness, and counsels using not more than ten or fifteen drops at a time, by which the patient will have the sensations of pain much mitigated, and at the same time be perfectly conscious of its occurrence.†.

—The Report on Obstetrics in the 'Transactions of the American Medical Association,' also contains a full notice of the subject of Anæsthesia. The result of the inquiry is in its favour.

§ II.—*Diseases of Women unconnected with Pregnancy.*

2. *Vaginal Injections.*—Mr. Weedon Cooke narrates a case which is calculated to inspire greater caution in the use of vaginal injections than is commonly entertained. The patient who was the subject of leucorrhœa, was attacked with symptoms which required Mr. Cooke to make an examination. On doing so, he was surprised to find the vagina contracted so as barely to admit the finger, and intensely hot and painful. The bowels were confined. There was ardor asinæ with great febrile excitement. The history of the case was, that for some weeks the patient had been injecting oak bark and alum, and had not taken the precaution to wash out the congealed albumen. The consequence was, that the secretion adhered to the os and cervix, and caused the symptom complained of. Mr. Cooke could only remove a small portion at the time, but in a week's time, with the aid of emollients, he succeeded in perfectly cleansing the passage.‡

3. *Ovarian Cysts; Spontaneous Rupture of.*—Our preceding volumes contain instances in which this event has taken place, both with a favorable and unfavorable result. Mr. Crisp has enabled us to add to their number, by the publication of three cases. The first case was, in all probability, rather an instance of fallopian pregnancy than ovarian cyst. In the second case a distinct cyst was formed, with an aperture the size of a sixpence. The same was the case in the third instance. These cases were all fatal, preceded by symptoms indicating rupture of some internal viscus, with effusion into the peretoneal cavity.

* London Journal of Medicine, March 1850. † Medical Times, March 2, 1850.
‡ Lancet, May 11, 1850.

4. *Ovarian Dropsy, New Operation for.*—At a recent meeting of the Westminster Medical Society, Mr. T. B. Brown mentioned a modified operation which he had performed in this disease. He believed that the plan would be found of great practical utility, as well as free from the danger which attends the formidable operation for ovariotomy. The case was looked upon both by the operator and by Mr. Fergusson, as having only a few days of life remaining, and this operation was considered as holding out reasonable hopes of prolonging her life, if not even of arresting effectually the disease itself. The operation was successful in prolonging her life for some weeks, and its whole course clearly showed that in cases free from other serious disease this operation was calculated to cure many cases of ovarian dropsy. He (Mr. Brown) observed that this operation differed materially from Mr. Bainbridge's, inasmuch as that performed by him required the patient to be in the prone posture for many months; whereas this enabled the patient to be on her back, on water-cushions, which added very greatly to her comfort, and also enabled the nurse to dress and clean the wounds without fatigue or annoyance to the patient, as well as enabled the surgeon to apply pressure over the cyst, by placing strips of plaster from the opposite side of the abdomen, and bringing them firmly over beyond the incision and open wound. He placed the patient on the edge of the bed, in the horizontal posture, and then drawing an imaginary line from the umbilicus to the superior spinous process of the ilium, and dividing it into thirds, he made an oblique incision from above downwards, and from within outwards, through part of the middle third and into the outer third.

The oblique incision was about three inches. He (Mr. Brown) dissected carefully through the muscles and fascia down to the peritoneum; through this could be seen the whitish shining coat of the cyst; he then made another smaller incision at right angles to the first, and dissected down to the peritoneum; this incision was about an inch and a half in length. At the point of the angle a large-sized trocar was introduced, and the fluid drawn off. The canula being kept in, the peritoneum was divided, and reflected back; then the cyst was stitched by sutures to the aponeurotic tendon of the external abdominal oblique muscle, carefully avoiding the other structures; these sutures were nine in number, and were so arranged as to secure completely the cyst on all sides to the tendon of the muscle, and prevent any escape of the fluid from the cyst into the peritoneal cavity; the canula was now withdrawn, and by means of a pair of scissors the cyst was divided between the sutures; a pledget of lint, soaked in oil, was then introduced into the wound, and changed occasionally, and some adhesive straps placed across the abdomen, to keep up gentle pressure. Not a single bad symptom, referable to the operation, followed. The second operation was performed in a similar manner, and in the same position, but a piece of the cyst was cut out, the fluid being first evacuated, and then the remaining portion of the cyst was allowed to return to the peritoneal cavity, the external wound being closed; pressure was applied over the whole abdomen by means of adhesive strapping and flannel bandage. This operation was intended to imitate spontaneous rupture, and was only to be recommended where the fluid was of an unirritating character.*

5. *Os Uteri,—Ulceration of, its frequency denied.*—At a previous page we have given an abstract of a paper by Dr. Tyler Smith, in which he calls in question the alleged frequency of inflammatory ulcerations of the os and cervix uteri. He states that an extensive experience in female diseases warrants him in the belief that the frequency of such lesions has been greatly exaggerated, and that simple ulceration, on the contrary, is a very rare

* Prov. Med. and Surg. Journal, April 17; from Lancet.

affection. In making this assertion, it must be stated that Dr. Tyler Smith insists upon the definition of ulceration which is applied to loss of substance on other parts; but he admits, incidentally, that superficial erosion, and granulations are so common, that probably few women escape them. In connexion with the subject of ulceration of the os uteri, Dr. Smith has attacked the common use of the speculum vaginæ in the present day, implying that it is used to an injudicious extent, and which is not only useless or injurious physically, but inflicts an unnecessary moral degradation upon the female mind.

To this Dr. Henry Bennet has replied, that Dr. Smith should have entitled his paper, "On the Pathological meaning of Ulceration, as applied to Lesions of the Uterus," as the present title implies a denial of Dr. Bennet's views, which is not in reality to be found in his paper. With regard to the proper interpretation of the word ulceration, Dr. Bennet considers that he has followed the highest authority, and quotes the words of Samuel Cooper in his support. He shows that an ulcer of a mucous and a cutaneous surface are not alike, and that we are not to expect the undermined or inverted edges of the latter in solutions of continuity of the former tissues. In the conclusion of his paper, Dr. Bennet indignantly vindicates his country-women from the charge of immodesty and pruriency, which Dr. Smith's remarks seem to involve.*

—The warfare against the speculum thus commenced has been continued by Dr. Marshall Hall and Dr. Lee, and has given rise to a very lengthened and important discussion at the Westminster Society.

Dr. Marshall Hall's share in these proceedings consists in a communication purporting to describe a new and distressing form of hysteria, which he affirms to be the result of the vaginal examinations now so frequently made. He states that he has known cases of the most revolting attachment, on the part of such patients, to the practice and to the practitioner. He has known them to speak of "the womb" and of "the uterine organs" with a familiarity which was formerly unknown. The current of the ideas becomes hypochondriacally directed to these organs. The very mind is poisoned. A new and lamentable form of *hysteria*, almost of *furor uterinus*, is induced, with this aggravation, that the subject of distress is either concealed by the greatest effort, or explained at the expense of virgin or female modesty.

There is, he continues, a case of "poisoned mind" in the male sex, induced by the quack doings of the day, relative to the existence of impotency, which all of us must have treated and deplored. A similar case of "mental poisoning" is now being induced in the other sex by the frequent, constant, and undue reference, on the part of the profession (?), to the condition of "the uterine organs."

He describes these latter patients as becoming reserved, and moody, and perverse, and speaking unintelligibly in broken sentences; the peace and happiness of the family circle is broken up; subjects are discussed on the domestic hearth which ought never to be mentioned except in the sick-room; words which wound are spoken, and thoughts which are derogatory are expressed, by other, perhaps by the male, members of the family.

He speaks of one poor miserable patient, who comes to him weekly, thus afflicted. She had been treated by the speculum and the caustic for months, as an out-patient at University College Hospital. She afterwards went to Dr. Robert Lee twice, who examined and declared that there was *no* uterine or vaginal disease. Meanwhile, the miserable patient's mind is absorbed by this ideal malady, and the peace of her husband's home is destroyed.

* Lancet, May 18.

He mentions also the case of a poor curate's wife, who had come to London for medical aid, at great inconvenience. During his short attendance, this patient was constantly urged by a friend, a titled lady, (the aristocracy always take the lead in quackery,) to send for her physician, who is a strong abettor of the speculum. The *course* which followed may be imagined, and need not, he says, be described. A case of more complicated misery for a husband cannot well be conceived—a sickly wife, afflicted with uterine hypochondriasis, set upon by a titled advocate of the uterine quackery, with straitened resources.

In conclusion Dr. Hall states that he has seen cases in which the speculum and caustic having been employed—and unduly employed, as he believes—the patient remained more miserably afflicted in mind and body than ever, and this the *effect* of that treatment. He considers that the cases in which the young, and especially the unmarried, are afflicted so as really to justify the use of the speculum to be rare; and the cases in which the injection of a solution of the nitrate of silver by her own hand may not take the place of the application of this valuable remedy in substance by the hand of the practitioner, to be rare indeed.*

—Dr. Robert Lee's communication to the Medico-Chirurgical Society has also for its object the deprecation of the frequent resort to the speculum vaginæ. He commenced his paper with an historical account of the invention of the speculum, tracing it to the days of Domitian. He then proceeded to speak of Recamièr and Lisfranc's practice, and the custom of examining prostitutes; after which he enters into the more immediate object of his paper. This is to give concisely the results of his observations during the last twenty-three years on the use of the speculum in the diagnosis and treatment of uterine diseases, believing that at the present time it is equally important to the medical profession, and to society at large, that the legitimate use and real value of the speculum in practice should be accurately defined and made known.

In the two great classes of organic diseases of the uterus, malignant and non-malignant, and in all the displacements of the uterus, he says he has derived little or no aid from the speculum in their diagnosis and treatment. Several cases of ulcerated carcinoma are then related, in which the speculum, and ignorance of uterine pathology, appeared to have led to the commission of the most grievous mistake.

The author then proceeds to give a sketch of uterine diseases before the middle period of life, and observes that an examination of the physical condition of the uterus in unmarried women, either with or without the speculum, he has always refused to make, even when requested to do so, unless pain, severe and almost constant, in the region of the uterus, leucorrhœa or hemorrhage which did not yield to treatment, and where the symptoms did not make him strongly suspect the presence of some displacement or organic disease. In cases of obstinate leucorrhœa he has often employed the speculum in married women, after he had failed to detect the existence of organic disease by the ordinary mode of examination. The appearances observed in these examinations are then minutely described, and the fact stated that the author had never seen ulceration of the os and cervix uteri, in such a case, which was not of a specific character, especially scrofulous and cancerous. The lamentable effects of applying potassa fusa to the os and neck of the uterus are then given in the histories of several cases.

The following important statistical statements were then given by the author:

* Lancet, June 1.

"In the year 1832," he says, "my colleagues at the St. Marylebone Infirmary, Dr. How, Dr. Sims, Mr. Stafford, and Mr. Perry, late secretary of the Society, at my request desired that the uteri of all the women who died in the wards should be carefully examined, and that they should be preserved for my inspection when any morbid appearance was observed. From 1017 post-mortem examinations of females of all ages, made by Dr. Boyd (after deducting those of children and others, in which special mention is not made of the uterus), there were found 708 where either the state or weight of the uterus was noted. In 13 of these there was congestion or inflammation which had no specific character, and in some the inflammation was limited to the fundus, and could not have been detected unless the uterus had been removed or cut open. In at least 3 there was enlargement and induration, which did not appear to have any specific character, and in 2 there was extreme wasting; 24 were puerperal cases; 13 dropsy of the ovaries or fallopian tubes; in 31 fibrous or bony tumours; and in 21 cancer." My impression is, adds Dr. Boyd, in the same report, that ulceration of the neck or mouth of the womb is an exceedingly rare disease, else I must, he says, have observed it; having cut up and weighed many hundreds, it could scarcely have escaped my notice.

Dr. Allen, the present resident medical officer at the St. Marylebone Infirmary, has held the office about twelve years, and he states that he has examined or been present at the examination of the bodies of more than 1000 adult females, and of these he does not believe that he ever saw more than 20 examples of ulceration of the os uteri of any kind, scrofulous or venereal, excluding cases of ulcerated cancer of the uterus, which were known to exist before death. Dr. Allen further states that he has observed in some cases a portion of the mucous membrane of one lip slightly abraded: this he has seen occasionally, but not often.

Mr. Prescott Hewett was six years curator of the museum of St. George's Hospital, and conducted all the post-mortem examinations. He states that during that time he could not have examined fewer than 600 uteri; and very seldom, if ever, did he meet with anything which could be called ulceration of the os and cervix uteri independent of scrofula and cancer. Mr. George Pollock held the same office for three years, during which time he examined the bodies of 300 women, and in every case the uterus was cut open and examined. In four uteri, ulceration was observed; but three of these were scrofulous patients, and scrofulous ulceration existed in other organs. In the fourth case the ulceration must have been cancerous, as it involved the vagina extensively as well as the os uteri. Mr. Hewett and Mr. Pollock did not, therefore, observe a single example of simple ulceration of the os and cervix uteri in the 900 uteri they examined; which confirms the accuracy of the opinion given by Dr. Boyd, that ulceration of the neck or mouth of the womb is a very rare disease.

Mr. Gray succeeded Mr. Pollock at St. George's Hospital, and he examined 180 uteri. Distinct ulceration of the os and cervix was only observed by him in three uteri, and the nature of the ulceration in these three cases was not determined with certainty. Mr. Gray states to me further, that redness, slight abrasions, and granulations, were sometimes, but not frequently, observed.

Neither in the living nor in the dead body (says the author) have I ever seen ulceration of the os and cervix uteri, except of a specific character, and especially scrofulous and cancerous; but I have met with a considerable number of cases in which it had been affirmed by others to exist, after deliberate and repeated examination by them with the speculum, where

I ascertained that ulceration did not exist in the os and cervix uteri, nor disease of any kind.

Cases are then given in which this gross mistake had been committed, and the paper concludes with a remarkable case of a lady, æt. 50, communicated by Dr. Jas. Copland, in which the speculum was used with fatal effects, where it was ascertained after death that the uterus and all its appendages were perfectly healthy. There were marks of recent violence at the orifice of the vagina, and the hymen was torn. Lymph recently effused was found coating the upper part of the spinal cord.

The reading of this paper, which had been previously expected, had drawn a large assembly of members and visitors, and a discussion ensued which, as it is of some importance, we shall give without curtailment, as supplied by the reporters to our weekly contemporaries.

Mr. Acton said the society was indebted to Dr. Lee for having brought before it instances showing that a plan of treatment, however good in proper cases, might be abused, and no one more than himself felt the necessity of restraining within proper limits the employment of a valuable instrument like the speculum, the use of which he had particularly introduced to the notice of the profession nine years ago, by coloured delineations of the complaints in question, in his work on 'Venereal Diseases and Affections of the Uterus.' But why the speculum should be singled out for the strong observations made in the course of the paper he was at a loss to conceive. He was daily in the habit of treating cases where the abuse of drugs and lotions was particularly evident. Women were allowed to linger on, the victims of affections of the uterus, who for years had been employing these supposed remedies, without recourse being had to the instrument, which had too often been cried down by those who were now employing it. Much had been said respecting the indelicacy of the proceeding, and in the paper read that evening some accounts that might startle propriety were advanced; for instance, it had been stated that instruments were thrust or poked three inches within the os. Must not this be exaggeration? He (Mr. Acton) who had examined a large number of women was not aware that the uterus extended so far. As to the exposure and indelicacy which had been spoken of, English surgeons ought not to throw such imputations in the teeth of their neighbours, for what could equal the disgusting way in which females are treated in the London hospitals? A foreigner might well blush to see a London surgeon, attended by a ward full of pupils, throw the bed-clothes off a poor creature, and expose her to the gaze of those who are often attracted by a morbid curiosity. Yet in a paroxysm of affected regard for female feeling, charges of indelicacy are now brought against those who find it necessary to employ the speculum. What are really the facts which have been so much exaggerated? For the three years that he (Mr. Acton) had attended the venereal hospitals at Paris, the following was the plan pursued: students were not admitted indiscriminately; the women to be examined were not exposed in the wards, but a screen was placed before their beds if they were unable to get up; those who were able to walk were taken to the end of the ward, separated by a partition or screen, and then examined; thus 80 or 100 women were seen and effectually treated every morning. Now that he was on the subject, he must entreat the attention of the Society to another fact. In France these women were sent out cured from the hospitals, but this, he regretted to say, was not the case with women attended at the London hospitals. He was frequently consulted by patients who had contracted disease from women just dismissed from hospitals, connexion having been indulged in, in the belief that no risk of infection could occur. In a sanitary point of view, the examination of these women in

London was often a mere farce; for, in consequence of not employing the speculum, the complaint affecting the external organs only was cured, the interior of the vagina remaining in a state of disease, which continued to spread the contagion when they quitted the hospital; these were, in his (Mr. Acton's) view, some of the abuses resulting from not using the speculum. Great surprise was expressed, that these lesions of the uterus were not observed after death; why should they expect the organ to present appearances which were not found in any other viscus. To illustrate this assertion (that after death we should not expect to find the appearances discoverable during life) he might cite the instance of a woman, murdered by her paramour some few years ago in St. Giles', who had contracted gonorrhœa from her. Through the kindness of Dr. Read, he (Mr. Acton) had carefully examined the uterus, but no ulceration could be found, all redness had subsided, and a glairy discharge from the os was alone to be discovered. Here, then, was an instance in which undoubted infection had taken place, although but little appearance of disease could be found after death. Dr. Lee had objected to the treatment by cauterization, because granular affections of the conjunctiva were produced by caustic. He (Mr. Acton) was aware such an assertion had been made by one eminent man, but the fact was contested, even in cases of affection of the eye, and in diseases of the uterus there could be no doubt that a granular condition of the organ existed before any treatment had been pursued, that lotions were inefficacious, and that caustic was the only means of cure, and this, he must maintain, could not be employed efficaciously without previously introducing the speculum, which, in proper hands, was a most valuable instrument.

Dr. Ashwell said, he had listened with great pleasure to the paper just read, and he felt that the profession and the public at large were deeply indebted to Dr. Lee for this able, temperate, and most seasonable expression of opinion. The paper dealt with what he thought had now become a great grievance, viz., the unnecessary employment of the speculum uteri. He (Dr. Ashwell had had, at least, a moderate share of experience in the treatment of female sexual disease, both in hospital and private practice; and he had no hesitation in affirming, that the results of such practice were decidedly opposed to the views which had lately been advanced. He denied the accuracy of the statements, as to the extreme frequency of inflammation and ulceration of the cervix uteri; he could not concur in the remarks made by Mr. Acton; and he would ask, without more than a passing allusion to the large number of *post-mortem* examinations at St. George's Hospital and the St. Marylebone Infirmary, what was to be inferred as to the accuracy of the statements made by Dr. Bennet. Out of more than 3000 examinations the neck of the uterus was found to be the seat of inflammation and ulceration (excluding, of course, the ulcerations of malignant disease, such as cancer) in not more than 25 in 1000. This result Dr. Ashwell stated to be in accordance with 1000 cases of uterine disease falling under his care as Obstetric Physician to Guy's Hospital, many of which, observed Dr. Ashwell, were addressed to me by you, sir, (alluding to the President, Dr. Addison.) Thus, out of 1000 cases, there were but 25 in which inflammation of the cervix uteri presented itself. Now, this was precisely the class of patients treated by Dr. Bennet, at his dispensary, not from the higher walks of society, but persons in whom that inflammation would be most likely to occur. Taking these results, therefore, with those recorded by Dr. Lee, in his valuable paper, they constitute a series of facts strongly opposed to the statement so often made of late years, that inflammation and ulceration of the cervix uteri are very common diseases. He (Dr. Ashwell) felt convinced that if the gentlemen in the room that even-

ing were polled, if the opinions of those who had had experience in these matters in private and public practice were obtained, the result would be fatal to the scientific fact which these gentlemen sought to maintain. He wished it to be understood, that it was his desire to say what he did without making any personal allusions; scientific discussions ought to be carried on without indulging in personalities. He could not but rejoice, however, in the fact he had just stated, because if it were otherwise,—if it could indeed be proved that these cases were as numerous as had been asserted, and that the disease really existed, as had been stated, and that there was but one proper mode of treating it—that by the speculum, it would then become a question whether it would be right to violate the feelings of English women, by its constant employment, as at present practised. He contended that the use of the speculum, as it is now employed, was subversive of female safety and female delicacy. In seven instances out of ten the speculum was now used without occasion. He (Dr. Ashwell) did not make this assertion without sufficient data. Its employment has become almost *professional dishonour*, and it had been slowly forced on his mind, that if this state of things continued, it would afford almost a justification for the withdrawal of the treatment of female diseases from professional men. He (Dr. Ashwell) was glad that Dr. Lee had introduced cases in which the use of this instrument, and of the other, the uterine sound, had been attended with fatal consequences. He (Dr. Ashwell) could add many more such instances, but he would not harrow their feelings by the distressing details. Dr. Lee would deserve well of the profession, of society, and of the female sex, if he succeeded in putting something like a damper on the fashionable progress of this abused instrument.

Dr. Murphy addressed the society with some hesitation, as he felt that he stood in some degree in the position of a defendant, with regard to the use of the speculum, as contra-distinguished from its abuse. He would freely admit, with the author of the paper, and with Dr. Ashwell, that there could hardly be a more mischievous practice than that resulting from the abuse of the instrument; but, on the other hand, he would as distinctly assert, that he knew that, in the treatment of those uterine diseases for which its employment was required, no other means than the appropriate and proper use of the speculum could be had recourse to. He (Dr. Murphy) had been much surprised at hearing Dr. Ashwell state that he had only met with 25 instances of inflammation of the os and cervix uteri out of upwards of 1000 cases. Instances of that disease were met with every week in his (Dr. Murphy's) practice; at all events they were cases in which every symptom of inflammation was to be found. With respect to Dr. Lee's paper, he (Dr. Murphy) agreed as to the impropriety of using the instrument, and applying caustic in carcinoma uteri, as they would cause great irritation, and increase the disease. The discussion raised about inflammation and ulceration, he thought, was a mere matter of words; the proper question he believed to be, How were the inflammation and ulceration to be treated? In these cases there was a circumscribed inflamed spot, proceeding to ulceration, granulations, or the secretion of pus. How was this to be treated? Would constitutional treatment, without local applications, remove it? He (Dr. Murphy) believed it would be perfectly useless. Constitutional treatment alone might be continued for years, but no advantage would follow until the nature of the local disease of the cervix were discovered, and treated locally by appropriate measures. He (Dr. Murphy) had seen hundreds of cases of uterine disease, and in seven tenths of these there was uterine inflammation. With respect to the remarks as to the effect of this proceeding on English women, he knew that every one admired

the character of the sex; no parties were more sensitive to anything approaching to indelicacy or indecency; and he would ask the society if they could believe that any gentlemen could be going about making an unnecessary and improper use of this instrument, or that they could gain the position they had in society and in the profession if it were so. He (Dr. Murphy) could not believe it. They had derived a benefit from the use of this instrument in the investigation and treatment of disease, and they continued to employ it accordingly. He must admit, at the same time, that some unfortunate cases had occurred in the hands of those who did not know how to employ it. He believed that fatal peritonitis might follow its unskilful and injurious application. When he himself first began to pass it, he found it very difficult to distinguish a fold of the mucous membrane of the vagina from the os uteri. Now, a person applying caustic by mistake to this fold at the upper part of the vagina, where it is covered by peritoneum, might induce an attack of peritonitis in consequence, which might end fatally. But the proper application and employment of this instrument ought not to be generally condemned on this account, because unskilful, rash practitioners might do, and have done, mischief with it.

Dr. Henry Bennet remarked, that, although there were many points in Dr. Lee's paper with which he did not agree, he considered it, on the whole, a valuable contribution to medical literature, cautioning the profession, as it did, against the abuse of instrumental treatment. The most important feature in the essay was, in his opinion, the admission, on the part of Dr. Lee, of the existence of the inflammatory lesions of the cervix uteri, which had been described by modern writers, ulcerations in their various forms and stages. The crowded state of the meeting was also a sign of the times, as it showed the great interest which the profession was beginning to feel in the subject. Dr. Lee's principal objections appeared directed against the asserted frequency of these inflammatory lesions, against the use of the more severe escharotics, and more especially of potassa fusa, and against the examination of virgins. Dr. Lee attempted to disprove the frequency of inflammatory ulceration of the cervix by the results of *post-mortem* examinations made many years ago at the Marylebone Infirmary, and more recently at St. George's Hospital, and also by instances of erroneous diagnosis which had fallen under his own observation in private practice. He (Dr. Bennet) did not admit either argument. It was a well-known fact in the history of medical science, that the most eminent pathologists often passed over important lesions without observing them, until their attention had been thereto directed; and when these researches were made at the Marylebone Infirmary, a *practical* knowledge of the inflammatory lesions of the cervix uteri did not exist in the profession; nor did he consider, without in the slightest degree calling into question their high attainments, that the prosectors of St. George's alluded to had shown that they possessed the practical knowledge of minute uterine lesions in the living, that could alone give weight and importance to their researches on the dead. Moreover, it must be remembered that the females in question died from general disease, without the existence of any uterine ailment having been suspected, and that the discovery of such lesions, on even a very limited proportion of their number, was of itself a clear proof of the not unfrequent existence of the disease. It was not likely that these forms of disease would be frequently observed after death, as they were not fatal. Although Dr. Bennet had seen many hundred cases of uterine ulceration within the last seven years, he had only lost one patient whilst under treatment, and that was a case of phthisis. The cases of erroneous diagnosis mentioned by Dr. Lee proved nothing at all with respect to the question at issue; but he

(Dr. Bennet) would take that opportunity of most emphatically repudiating all connexion with those cases. Not one of them had been under his care; and he could defy the author of the paper, or any other person present, to say to the contrary. In the course of the discussion, Dr. Ashwell had denied the frequency of ulceration of the uterine neck, and had appealed to his experience at Guy's Hospital, where he had examined and treated nearly one thousand cases of uterine disease, and only met with twenty-five of inflammation of the cervix. He was sorry to say, that there was no possibility of conciliating the assertions of Dr. Ashwell with the results at which he (Dr. Bennet) had arrived, and which he had published in the second edition of his work on uterine inflammation, viz., that out of 300 cases presenting uterine symptoms, he had found 243 of inflammation, and 222 of ulceration of the cervix uteri. Either he or Dr. Ashwell must be totally wrong; there was no medium. He himself explained the discrepancy by supposing that Dr. Ashwell did not consider, at the time, that the symptoms presented by his patients warranted a specular examination, and had not, consequently, recognised the real nature of their complaint in the majority of instances. His own statistical researches were commenced because he was startled, on perusing Dr. Ashwell's work, to find results which clashed so much with his experience; and he must be either right in his conclusions, or labouring under some severe form of hallucination, which led him to think that he saw what in reality did not exist. He was, however, quite prepared to put his views to the most open and searching test, and challenged the society, or any gentlemen present, to name a committee to examine with him fifty, or a larger number of uterine patients in any hospital or institution in London, and he would accept the results. If his views were correct, they would stand such a test in any country or in any institution; and if they were false, the sooner they were proved to be so the better. With reference to the use of severe escharotics, and principally of potassa fusa, which he congratulated himself on having introduced into British practice, they were absolutely necessary in some cases, if the patient was to be cured. At the same time, an agent as powerful as potassa fusa ought to be used with the greatest caution, and was as much capable of producing mischief in rash and unskilful hands as the knife itself. He likewise congratulated himself on having been the first to point out to the profession the existence of severe inflammatory ulceration in the virgin, as he had thus been the means of rescuing many interesting females from a life of intense suffering, and possibly from premature death. It was a conscientious feeling of imperative duty which had first led him to overcome his own scruples, and those of his patients and friends, in these distressing cases, and he had never done so except in cases in which every other feasible means of treatment had been in vain tried, and in which the patient appeared devoted to hopeless suffering. He (Dr. Bennet) had brought with him, to show to the society, the uterus of a young virgin lady of eighteen, who died of pneumonia, under the care of Mr. Anderson, his late colleague at the Western Dispensary, which presented an admirable illustration of severe and extensive ulceration, and he would ask, would any gentleman present say that, were his own daughter reduced to the verge of the grave by such a disease, he would object to instrumental treatment, *all other means having failed?*

Dr. Stewart said, that the gentlemen who had previously addressed the society had spoken *ex cathedrâ;* he hoped to be excused for putting a question or two in the capacity of a learner. He wished particularly to know whether there were not, in a considerable proportion of those who presented themselves with symptoms of uterine disease, a peculiar state of the os and cervix uteri—ulceration, granular state, or abrasion, call it by what name you

will—which got rapidly well under the use of escharotics? If there were not, he must disbelieve all his past experience. He, in common with Dr. Murphy, felt much surprised at Dr. Ashwell's statement regarding the infrequency of such cases, for, in his own limited experience, he had certainly seen some fifteen or twenty, in which, around the os, there was a broken, and granular, and sometimes bleeding surface, from the size of a sixpence to that of half-a-crown. These cases, after resisting every other remedy, got well rapidly under the use of the solid nitrate. Now, he understood Dr. Lee to denounce, as a general rule, the use of escharotics in such cases; because, in his paper, he stated that the granular cervix and os uteri very closely resembled that granular state of the conjunctiva which is produced by the abuse of escharotics. The natural inference, from this statement, seemed to be, that, as a general rule, the use of escharotics was to be avoided in the treatment of granular cervix, a conclusion which his (Dr. Stewart's) experience, so far as it went, did not justify.

Dr. Lee, being called on by the President to reply, expressed a wish first to hear the opinion of Dr. Locock, who was present at the meeting.

Dr. Locock said, that he came to the meeting rather prepared to receive than to impart information on the question that had attracted so large an assemblage, but having been so pointedly called upon by Dr. Lee, he would not shrink from declaring his sentiments. He fully agreed with Dr. Lee in nearly every point brought forward in his paper, and highly approved of the distinctions made in the cases in which the speculum was of service in the investigation and treatment of uterine disease, and in those where it was either useless or actually mischievous. But he was not one of those who were raising an outcry against a valuable instrument, because it had been wofully and shamefully abused in the hands of a few, who had disgraced themselves and the profession by its improper employment. There always had been, and there always will be, some unworthy characters who, for the sake of notoriety or the lucre of gain, would stoop to such practices; and he certainly had met with many sad instances where base advantage had been taken of the necessary privacy and great unwillingness to have any fresh and strange medical men called in, incident to the delicacy of females, and where ulcerations had been purposely and artificially made with caustics, when no uterine disease had previously existed. But such practitioners were not looked upon as models, but as beacons by the profession, and their day with the public would soon vanish. Much had been said that night of the indelicacy of the speculum, but for his part he could not consider that this was an objection worth naming, as, when properly managed, there need be no exposure of the person, any more than in looking at the throat, with a mask over the face. In his own practice, he usually placed a patient on the left side, introduced the speculum under the clothes, and then drew the clothes round the instrument, so that not the least exposure of the person took place. He had often had mothers, and even husbands present, without the least outrage to their feelings. His friend, Dr. Bennet, usually placed his patients on the back; he (Dr. Locock) had often witnessed Dr. Bennet's practice, and was sure no one could take more care that there was no personal exposure. He had often witnessed much more indecency and carelessness in the practice of surgeons, in their management of diseases of that part of the frame or of the rectum, than he was in the habit of seeing among accoucheurs. With respect to the frequency of ulcerations of the uterus, so called—for, whether real ulcerations or not, all understood what was meant by the phrase—he greatly differed from the statements of Dr. Lee and Dr. Ashwell, and he thought there was a considerable fallacy in their views. For instance, in the 1000

cases mentioned by Dr. Ashwell, where the speculum discovered only about 25 to labour under the state of the uterus alluded to, it must be remembered that these were not 1000 cases of uterine malady, but cases taken at random; and it might as well be said, that diseases of the eye were extremely rare, because, taking 1000 cases at random, in general practice, there might not be more than 25 cases of eye-disease amongst them; and yet an oculist would say they were exceedingly common, because only such cases come to him, as, usually, only cases of uterine disease come to the accoucheur. In his own practice, he must say that he considered such cases extremely common, and the touch was rarely sufficient to discover their exact character. He particularly alluded, also, to the advantage of the speculum in the management of that especial disease, first described by Sir Charles Clarke, where a peculiarly thick, glutinous, muco-purulent discharge was present. By the speculum it was seen that this discharge did not proceed from the vagina, but only from the interior of the uterus, and vaginal injections could not reach the seat of the disease, whereas it was often readily and easily cured by passing nitrate of silver within the os uteri. It is well worthy of recollection, that Sir Charles Clarke's sagacity first made out that this affection was an inflammatory condition of the glandular structure at the cervix uteri, though he was not in the habit of using the speculum; but he (Dr. Locock) was quite sure, that had Sir Charles Clarke continued in practice, he would not have neglected so useful an instrument. He would not any longer trespass on the society; but he must say for himself, that he was not to be deterred by the clamour raised against the speculum, owing to the very few who used it wrongly, both morally and medically, and he thought that, both for their own sakes, and for the sake of their patients, medical men were bound not to neglect any means possible for investigating and for treating disease. He had found it so valuable, that he should be sorry to be without it, though he disapproved as much as any one of its abuse; and, although he would avoid it most earnestly in unmarried women, yet there were now and then cases in which they would not be doing their duty to their patients, if they did not use it even in virgins. And, after all, there was as much damage often done to a virgin by a large and a clumsy finger as by a small speculum carefully introduced; and, as for the damage otherwise, they should remember that a young girl's purity was in the mind, and not a mere bodily inviolation.

Dr. Lee being loudly and universally called upon by the society for a reply, rose and said: It is now admitted on all hands, that in the diagnosis of the organic diseases of the uterus, malignant and non-malignant, and in every form of displacement of the organ, the speculum is wholly useless. In all the varieties of cancer of the uterus, not only is the speculum of no use, but it has been declared this evening to be positively injurious. It is impossible to believe that the gross mistakes respecting cancer of the uterus, described in the paper, could have been committed, if the speculum had not been employed, and the evidence furnished by the symptoms and the sense of touch had not been wholly disregarded. Such mistakes were never committed till the speculum came into use, and the sense of touch was lost. It is important for the profession to know, that there is no difference of opinion upon this point, viz., that in all the organic diseases of the uterus, and in all the displacements, the speculum is of no use. In what diseases, then, of the uterus, may it be now fairly inquired, does the instrument furnish aid in the diagnosis? The only reply given to the question this evening is, that it is indispensable in all cases of ulceration of the os and cervix uteri from simple inflammation. From the various and important statistical documents now read to the society, it is conclusively proved that, in 3000 uteri carefully examined after death at

the St. Marylebone Infirmary and St. George's Hospital, by pathologists of established reputation, scarcely an example of simple inflammatory ulcer of the os and cervix uteri was met with. If simple ulceration of these parts existed in many cases during life, it could not fail to have been very often seen in so many uteri, taken from the bodies of women of all ages, who had died from accidents and from acute and chronic diseases. Dr. Murphy has said, elsewhere, that ulcers of the os and cervix uteri might exist during life and disappear or become invisible after death. Dr. Lee then asked, is this the case with ulcers of the mucous membrane of the stomach, bowels, or any of the other viscera, or even with the uterus itself, when it has been actually ulcerated from any specific cause. The very reverse of this is known to be the fact; and it is impossible to believe that, if simple inflammatory ulcers of the uterus were so common in the living body as has been represented, that they should be invisible in the dead. But the truth is, they do not exist in the living, and therefore they cannot be seen in the dead body. In the whole course of his professional life, he had never seen a distinct simple inflammatory ulcer in the living subject, although he had very frequently employed the speculum since 1827; in fact, in all cases where he could not form a decided opinion of the disease by the ordinary mode of examination, and where he thought the sense of sight would assist in the diagnosis. Dr. Lee held it to be wrong, in any case, to employ the speculum where the nature of the disease could be clearly determined by the sense of touch. A gentleman, this evening, has asserted that Dr. Lee has denounced the speculum in all cases; but he could not have listened to the paper when it was read, otherwise he must have heard that his great object in the communication to this society was to define and make known the legitimate use and real value of the instrument in practice. It was equally erroneous to assert, as had been done, that the application of caustic and escharotics of every kind to the os uteri had been denounced. Dr. Lee then stated, that sixteen years ago he had described, in the 'Cyclopædia of Practical Medicine,' under the title, "Inflammation of the Follicles of the Os Uteri," the disease which was now erroneously called ulceration of the os and cervix. In the article in question, reference is made to the work of Madame Boivin, who had before described the disease under the title, "Granular Inflammation of the Os Uteri." Dr. Lee said, he had not described simple inflammatory ulceration of the os and cervix uteri, because he had never seen it, and he believed it rarely, if ever, occurred; and that the profession in this country had been grievously misled by Dr. Bennet on the subject. There was no end to the cases now coming under his observation, especially in young hysterical women, where the speculum and caustic had been employed for months, and where there was no ulceration, and where no ulceration or any other organic disease ever had existed. Dr. Lee even believed that Dr. Bennet himself had never seen simple ulceration of the os and cervix uteri, although he was now disposed to take so much credit for having been the first to describe what he erroneously supposed had escaped the observation of all preceding pathologists. Dr. Lee formed this opinion from Dr. Bennet's own published description of these supposed ulcers of the os and cervix uteri, which he read to the society; it was as follows: "The margin of an inflammatory ulcer," says Dr. Bennet, "is scarcely ever, if ever, either everted or inverted." "So much is this the case, that it is generally most difficult to say where the ulceration finishes, until, by the application of the nitrate of silver, the margin of the sore, or point where the epithelium finishes, be revealed." "It is always on a level with, or above the non-ulcerated tissues that limit it; its margin never presents an abrupt induration. Owing to this circumstance, it is always impossible to determine by the touch the precise

point at which the ulceration terminates." Dr. Bennet does not know, he merely asserts, that the epithelium finishes at the edge of the imaginary ulcer. Is he certain that the epithelium does not remain, and by a state of morbid thickening give rise to the appearance of an ulcer, "which," he says, "is always on a level with, or above the non-ulcerated tissues that limit it?" Undoubtedly the mucous membrane, in most of these cases, is unusually vascular and thickened, and he (Dr. Lee) would not be surprised if it were to be found that the epithelium is present, and thickened also. "What would be thought, sir," said Dr. Lee, addressing the President, "of a surgeon who could not tell whether an ulcer existed on any organ of the body, without the application of such a test; who would say to his patient, let me first rub the part with lunar caustic, and then I will tell you whether an ulcer exists or not? Dr. Bennet's ulcer cannot be recognised by the sense of touch, for it has no margin, inverted or everted; it cannot be seen through the speculum till the part has been rubbed with nitrate of silver; it has neither centre nor circumference, beginning nor end." Dr. Lee here sat down amidst the most enthusiastic cheering from the whole assembly.

[In thus giving at length this important discussion, we take the opportunity of expressing our astonishment at the opinions of Drs. Lee and Ashwell, veterans though they be in obstetric practice. We do not pretend to say to what lengths speculum practice may be carried in the metropolis, or to what indecencies it may be subservient among the more prurient of the higher classes, who have undergone the purifying education afforded by the reading of French romances and the association with French ladies' maids; but surely no means of curing disease should be suppressed simply because, in some hands, it may be abused, or because, as we well know to be the case in the present instance, it is by some made a quackery of. Since Dr. Bennet, whose assiduity in Paris in this very department we were well acquainted with at the time, made the results of his studies public in this country, we have not hesitated to make the speculum subservient to diagnosis, from a conviction of its importance. Some years' experience enables us to state that the frequency of inflammatory engorgements, superficial erosions, and granular ulcerations, is not in the least exaggerated by Dr. Bennet or Mr. Whitehead. We do not stickle for the term *ulceration*, but we assert, that a condition of os and cervix *is very frequent*, in which the epithelium is lost, and granulations, more or less luxuriant, pour forth a mueo-purulent discharge; that these conditions are the source of deteriorated health, and that the readiest, if not the only means of re-establishing health, general and local, is by the application of caustic.]

6. *Cervix Uteri, Eruptions on.*—In a communication to the Edinburgh Obstetrical Society, Dr. Simpson notices that the surface of the cervix uteri was liable to inflammation of an eruptive character, which apparently had hitherto been little, or not at all, studied by obstetricians, and were not yet described in works upon the pathology of uterine diseases. Among these special inflammations of the cervix uteri and top of the vagina, Dr. Simpson had observed eruptions referable to the vesicular, pustular, tubercular, papular, and erythematic orders of the classification of Willan and Bateman. *Herpes* (*herpes uterinus*) he had seen following the usual course of *herpes labialis* in two or three instances, in patients who had months previously been under treatment for common ulceration of the cervix; and Dr. Simpson suggested that perhaps this and other eruptions were occasionally the origin and basis of the common variety of granular cervical ulcer. *Acne*, in the form of chronic, hard tubercles and pustules, was by no means uncommon, and often coexisted with common ulceration. A papular form of eruption sometimes supervened in

chronic cases of uterine disease, and was usually diffused over both the cervix uteri and the interior of the vagina; sometimes having the characters of *Lichen;* in other instances presenting the appearances and severe itching symptoms of *Prurigo.* Eczema and patches of *Apthæ* also occurred. The treatment required to be varied according to the nature and character of the eruption, and consisted of the application of nitrate of silver, of medicated washes, and medicated pessaries, &c. In severe and distressing cases of prurigo of the cervix, vagina, and vulva, brushing the affected surface often with hydrocyanic acid was eminently useful.*

7. *Engorgement of the Uterus.*—Another discussion, allied to the preceding, has recently occupied the attention of the French Academy of Medicine, originating in a Report by M. Hervez de Chégoin, upon a Memoir by M. Baud, entitled "Deviations and Engorgements of the Uterus." This discussion was remarkable, not only for the great diversity of opinion prevailing among equally high authorities, and that on matters apparently capable of physical demonstration, but also from having brought into the field some eminent men (as Paul Dubois, Jobert, Recamier) who very rarely take part in the discussions at the Academy.

Of a discussion that has occupied so many sittings, we can only profess to furnish an outline.

M. Baud regards the diseases of the uterus from an exactly opposite point of view to that taken by Lisfranc, believing that both they and the deviations of the organ from its normal position are for the most part due to a disordered state of the general economy, in which the uterus participates, and on the relief of which these secondary and passive effects disappear. He concludes: 1. That all treatment which ameliorates the general condition is a step towards the cure. 2. Treatment ameliorating the local condition, to the detriment of the general, aggravates the disease. 3. Treatment should be adopted under the idea that the uterus is in a passive and mechanical condition. The remedies he recommends to carry out these views are of a tonic and corroborant kind, whether locally applied or given internally.

M. Hervez de Chégoin, reporting on this paper, while regarding the opinions advanced in it as too exclusive, yet states his belief that the local uterine affections are most aptly treated by general means, and that the *engorgements* observed in displacements of the uterus are often only the results of these, and disappear when the latter have been rectified. While he blames Lisfranc's indiscriminate treatment, he cannot admit that inflammatory *engorgements* requiring leeches may not sometimes exist; while, moreover, local *engorgements* may occur quite independently of a disorder of the health, the woman being otherwise quite well. In passive *engorgement*, too, dependent upon displacement, all internal treatment is useless without mechanical aid, which indeed M. Baud admits is then also sometimes required. M. Baud also attributes leucorrhœa to general debility, calling for tonics and astringents; but while it may be admitted that a tonic treatment best accords in general, there are other cases in which the mildest procedures are alone admissible. Every one has seen examples of obstinate yellow discharges, with a tendency to constriction of the vagina, and the production of painful fissures; which, though indolent as long as no physical cause of irritation exists, are exasperated by all tonic and astringent applications, and yield only to the mildest, of which distilled water forms one of the best. In other cases, in which there is an altered, thickened, or granular state of the lining membrane, neither tonics, nor emollients, nor any internal treatment, are of avail, until

* Edinburgh Monthly Journal.

the condition of this be changed by special applications. Leucorrhœa, too, resulting from uterine neuralgia, calls also for its special treatment.

M. Gibert: While practitioners of the olden times regarded the uterus as a kind of critical and depuratory emunctory, whose lesions depended in general upon a general diathesis, those of more modern times have been too much accustomed to consider it the point of departure for the most varied and most serious general accidents, counselling for what were most trifling ailments the most active procedures, and leading those who had little the matter with them to believe themselves dangerously ill. Such alarming statements, in fact, were the means of generating in those to whom they were addressed a series of general symptoms, pains, and disturbances of function, attributed to the disease, but which disappeared when these persons were subjected to a more rational treatment, and their minds tranquillized. A large hospital practice, in which constant examinations of the organs have been made, enables M. Gibert to assert: 1, That the alterations in colour, form, volume, texture, and situation of the neck of the uterus, signalized by so many surgeons as the point of departure and origin of such varied morbid phenomena, may be discovered without their having given rise to any of the ill consequences so frequently attributed to them; and, 2, the various symptoms, signalized by Lisfranc as the necessary accompaniments of engorgement, may occur without any sensible alteration in the cervix being discernible. Believing, however, in the existence of such a disease as *engorgement* of the cervix, he regards it as almost always an effect of a lymphatic diathesis, and one of the consequences of delivery.

M. Velpeau excited numerous replies by maintaining that *engorgement* of the uterus, as an affection independent of inflammation, had no existence; and although he limited this exclusion afterwards to the body of the uterus, yet even as regards the cervix, he maintained it is comparatively a rare affection, and one for which *inflexions* of the organ are frequently mistaken, these being of far more frequent occurrence than is generally believed. Lisfranc maintained that inflexions were only the consequences of engorgements; but M. Velpeau declared that, when hypertrophy exists, it is the consequence of the inflexion, and it is indeed always found on the side of such inflexion. Pessaries have been much misused; of service in simple deviation, they are of no service when the womb is inflected, and the abdominal bandage is then the only thing M. Velpeau has found act as a palliative. M. Velpeau believes that neither author nor reporter attaches a sufficient importance to local remedies, although he agrees with them as to the importance of general treatment in certain cases. The white discharges from the cervix result either from carcinomatous diseases, or from the presence of granulations or vegetations in the parts, which is indeed the commonest of causes of uterine discharges, and can never be efficiently treated without local means, of which the acid nitrate of mercury is by far the best.

M. Malgaigne believes, with M. Velpeau, that many of the uterine affections are local, and call for local remedies, but he thinks that the frequency of ulceration has been exaggerated. The reporter declares *retroversion* a much more frequent deviation than *anteversion;* but M. Malgaigne, while engaged at the Bureau in the application of pessaries, could never meet a case of retroversion, though examples of anteversion were frequent; but while this discussion was going on, no less than three examples of the former came under his notice, because, as M. Dubois declared, he had proceeded with the view of searching for them. As a local application in the engorged cervix uteri, he prefers the actual cautery.

M. Moreau considers M. Velpeau's assertions far too general; for,

because ignorant persons may mistake displacements for engorgements, it does not follow this may not exist. As M. Velpeau stated cadaveric proofs were wanting, he would cite an example on the living; for, a uterus having been removed on supposition of carcinoma, its body was found simply engorged. *Engorgement* of the cervix is of far more frequent occurrence. Contrary to M. Malgaigne, he believes that anteversion is very rare, and retroversion of the non-pregnant uterus is far more frequent.

M. Jobert considers that *engorgement* of the uterus may exist either as symptomatic of other affections, or idiopathically, and in this last case demanding local applications, as its principal, if not as its sole treatment; and it is here that he has found the actual cautery so valuable. Deviations of the uterus may be either congenital or acquired. In the first, the uterus undergoes a change in its proper texture, an atrophy or imperfection of development occurring in the direction of its curve. Such changes in form may produce no accidents until puberty, and none at all unless menstruation is impeded by them. These congenital deviations are irremediable by art; and while those arising accidentally may be remedied, they cannot be so by local means alone, dependent as they are upon an altered condition of the tissues, which must be restored to their normal state, mechanical means being used only as auxiliaries.

M. Robert entered into a long dissertation, to show that the symptoms attributed to *engorgement* were really due to a granular state of the lining membrane of the cavity of the uterus, long since pointed out by Recamier, and that on scraping these away (examined microscopically, they appear to be mere expansions of the proper texture of the membrane), and afterwards applying caustic, the symptoms soon yield.

M. Huguier, in answer to M. Velpeau's challenge to exhibit *engorgement* in the dead body, observed that, as in *engorgements* of other tissues, these rapidly disappeared after death, and that he had repeatedly measured the cervix before and soon after death, and found it diminished afterwards by more than a third. Nevertheless, he exhibited preparations to the Academy, which were generally acknowledged to demonstrate the engorgement in question. Of 2527 cases of which he has kept notes, at the Lourcine and Beaujon, he finds there were 131 well-marked examples of *engorgement;* and of these, in 106 it affected the cervix alone, 8 the body and cervix, 13 the body alone, and 4 remained unindicated.

M. Roux observed that *engorgement* may be affirmed from analogy and pathological anatomy. Thus, when we see the orifices of the mucous canals, the amygdalæ, spleen, liver, &c., liable to become engorged, it would be strange if an organ like the uterus, having abundance of vessels, and a periodical flux, and fulfilling functions often giving rise to irritation, should be exempt. Twice M. Roux had been induced to extirpate the uterus; in the one case cancer was far advanced, and hoping in the other to remove the organ in an earlier stage, it was found quite unaffected with organic disease, being simply engorged. A member inquired "what became of the patient?" M. Roux's solemn reply "obiit," coupled with the assurance that no consideration would induce him to undertake again this operation, ought to have conveyed a wholesome lesson to his younger auditors.

M. Hervez de Chégoin observed, that *anteversions* are of more frequent occurrence than *retroversions*, because the latter require in general a peculiar excavation of the sacrum for their production; but they give rise to less inconvenience than retroversions, being but an exaggeration of the natural position of the womb.

M. Amussat believes that, while Lisfranc much exaggerated the frequency

of *engorgement*, it would be a great error to deny its existence, or attribute it entirely to the operation of deviations, as also to refuse to admit that the affections of the uterus may exert a great effect on the system at large. In treating *engorgement*, if general measures are found insufficient, we must also resort to local ones, and not wait too long before we do so. Cauterization, if perseveringly used, is an excellent means, and even may be of avail in *cancerous* disease; for this is more amenable here than in the breast, and less liable to relapse. He prefers the solidified potass and lime to the actual cautery, but recommends it to be freely applied. He believes that both anteversion and retroversion occur more frequently than is allowed, and the one perhaps as often as the other, although retroversion, by its greater importance, has attracted more attention. He has succeeded in curing some cases by cauterizing the posterior surface of the cervix, and getting this to adhere to the opposite wall of the vagina.

M. Recamier, the originator of the modern pathology of uterine disease, delivered a discourse, tending to demonstrate the reality of uterine engorgement, which he regarded of an erectile nature, exactly analogous to erectile engorgements about the rectum.

M. Paul Dubois, who followed, limited his observations very much to the question of uterine displacements and incurvations. He said that "there can be no longer any doubt that anteversions and retroversions of the womb are accidents of frequent occurrence. But, as to their relative frequency I cannot express any decided opinion of my own. Some years ago, there was raised between M. Blandin and myself a discussion on this point; he believed anteversion to be much more common than retroversion, plausibly resting his opinion on the fact, that anteversion consisted merely in an exaggerated state of the natural inclination of the womb forwards. For my part, I expressed quite a contrary opinion, and brought forward, as the cause of the displacement, the driving of the uterus backwards by the distension of the urinary bladder,—a state of distension which is often carried to a very considerable extent, in consequence of the natural reserve of women, and the constraint imposed by our social habits. At the time of this discussion, I made a resolution to keep a detailed list of cases of displacement according as they presented themselves to me. The list was long when I ceased to keep it, but it afforded a result in favour neither of my own nor of M. Blandin's opinion. The retroversions and anteversions were found equal in point of number. Nevertheless, I am still inclined to believe retroversion to be the more common of the two forms of displacement."

"On several occasions, in the course of this discussion, the words inflexion and displacement (*deviation*) have appeared to be used synonymously, if not in signification, at least in the language of some of our colleagues; and I shall be astonished if this confusion, involuntary though it may be, has not caused some misunderstanding among those who, here and elsewhere, have entered into the discussion of this subject.

"Inflexion denotes, as the word itself implies, an alteration in the form of the uterus, which is in fact folded in two in the direction of its surfaces; but the word does not in any way imply a change in the situation or direction of the organ, although these latter changes may simultaneously co-exist. Displacement, on the contrary, implies a change in the situation and direction of the uterus, not an alteration in its form.

"Inflexion, when it is well marked, is generally a congenital affection, and one connected, as M. Jobert has justly remarked, with a series of other changes. Displacement is most frequently an accidental affection. Never-

theless, inflexion is sometimes acquired, and under certain circumstances it is a result of displacement. For example, when the fundus of the uterus is much displaced backwards, it may depress the posterior peritoneal cul-de-sac, and descend even below the level of the cervix uteri.

"Now it is difficult to conceive how so marked a displacement could be produced without the organ undergoing a certain degree of *incurvation*, but this change is not of the same nature as the real *inflexion*. In inflexion, the folding of the uterus is, if I may so speak, the capital pathological fact; in displacement, it is the change of position which constitutes the disease. The *incurvation* is in general a secondary and accessory phenomenon.

"In inflexion, the volume of the uterus is often less than in the normal condition, but the walls of the organ have their ordinary density.

"In displacement, complicated with incurvation, the volume of the uterus is often increased, and its density diminished, the displaced part presenting a boggy softness, and being frequently more sensitive than in the normal condition.

"Inflexion is generally an incurable affection; incurvation is not absolutely so, it may be rectified, but certainly with but slight chance of permanent success.

"Inflexion of the uterus does not appear to me to be capable of exercising of itself any unfavorable influence upon the health of the woman affected with it; it is an anomaly always innocuous, and which does not cease to be so, unless from some cause totally unconnected with any chronic uterine affection. This cause is generally partial occlusion or stricture of the passage destined for the transmission of the menstrual flux. This abnormal condition of parts gives rise to sharp pain, continued during the whole catamenial period. The coexistence of these two affections, the inflexion of the uterus and dysmenorrhœa, is almost constant. As to prolapsus, and the displacements, anteversion and retroversion, I think that, for my part, I can give them the same harmless character in all cases where they are not in an exaggerated condition. A contrary opinion is, I know, very generally entertained. It is expressed in the memoir of M. Baud, and in M. Hervez's report and other writings; it has also been stated in the course of this discussion by MM. Jobert and Amussat; but, although it is almost universally received, yet I agree with M. Lisfranc in thinking that these deviations have no other influence than what they derive from certain pathological complications, and in particular from a concomitant state of chronic inflammation.

"Two sets of causes are commonly cited in explanation of the injurious effects of prolapsus or of displacement of the uterus; firstly, the dragging upon the ligaments of the uterus,—that is to say, upon the parts which retain the organ in position; and secondly, the pressure exerted by the displaced viscus upon the various organs contained in the pelvis. But when you consider the natural laxity of these retaining ligaments, which permit of the greatest freedom of motion—when, above all, you compare this freedom of motion with the very limited sphere within which the motions of the uterus are confined—it is easy to see how little reason there is to believe in the alleged existence of painful traction exerted upon the ligaments by the displaced uterus.

"These displacements are frequently caused by the development of tumours in the pelvis. These tumours drive the uterus forwards or backwards, according to circumstances; and it is certain that, in most cases, although there is distinct displacement of the organ, the patients do not seek for medical advice till the increasing size of the abdomen causes inconvenience.

"As to the pressure exerted by the displaced viscus upon the neighbouring organs, it is easily seen that this is not the cause of the symptoms attributed to it; firstly, because the volume of the uterus, simply displaced, is not such as to cause actual compression of the pelvic organs; and further, because this pressure is quite easily borne in a great number of cases where tumours much larger than the displaced uterus occupy the greater part of the pelvic cavity, and inevitably compress the contained viscera.

"These displacements may possibly become the cause of severe suffering under two special conditions; on the one hand, when the organs with which the uterus is in contact are the seat of inflammation; and, on the other hand, when the body of the organ, in the case of retroversion,—the neck in anteversion, is the seat of engorgement or well-marked irritation.

"Under these circumstances, the friction caused by the passage of the fecal matters, upon the diseased parts, may cause acute pain. Again, it may happen, and such cases are not very rare, that adhesions are formed between the displaced fundus uteri and the rectum; and that the excretion of the fecal matters is in consequence rendered difficult and dangerous.

"My colleagues will not, I hope, imagine that I have founded upon theory merely an opinion so opposed to that which is generally received. Numerous cases, scrupulously well observed, both in women enjoying good general health, and who have consulted me for complaints quite unconnected with any uterine affection; and also in women who had been treated by me for catarrhal inflammation, of which they were cured, but who still had the uterus displaced without their having the least suspicion of it—these cases, I say, first originated in my mind the opinion I have brought forward, and further reflection has explained and confirmed it.

"In addition to this abnegation of the symptomatological importance too indiscriminately ascribed to uterine displacements, I shall add another; it is in relation to the influence exerted by engorgement, not only in producing, but also in determining the direction, of the morbid inclination of the uterus. Who does not see that, if this opinion were well founded, there could be no early pregnancy that was not complicated with marked prolapsus and displacement of the uterus, for the two circumstances are combined which are generally regarded as most favorable to the production of these pathological conditions, namely, general increase of volume, and a preponderating increase in thickness, in one part of the uterine walls."

In speaking of the treatment of uterine engorgement, M. Dubois referred briefly to the question of the malignant degeneration of the diseased tissues, giving his own belief in the negative; he also expressed his conviction that spontaneous recovery was the exception. He maintains both local and general treatment to be indispensable, but the relative importance of each would vary with the individual circumstances of the case. In private practice there is generally so great a preponderance of nervous phenomena, that the treatment is much complicated, and general treatment is rendered more necessary than among women of a lower class. This treatment consists in an association of tonic and sedative medicines. Prolonged confinement to the couch is in these cases hurtful, as the nervous susceptibility is aggravated by confinement. The local treatment need not be mentioned, being that generally known and understood.

M. Dubois considers *flexions* of the uterus as incurable, and attempts to remedy them as injurious, and even dangerous. Displacements, as retroversion and anteversion, and prolapse, do admit of mechanical treatment, especially the latter, but he disapproves of pessaries, excepting in prolapse. He appears either to be ignorant of the treatment of the former displacements by the

uterine sound and pessaries, or his silence is to be considered as expressive of disapproval.

With a few words from M. Recamier and Hervez de Chégoin, this lengthened discussion was brought to a close, without, as it appears, any settlement of the various opinions elicited. The Academy has seldom been occupied by a debate so confused, and as far as results are concerned so profitless.*

8. *Retroversio Uteri.*—A case of this displacement, followed by sphacelus of the bladder, occurs in the Neue Zeitschrift für Gebürtskunde. The patient was a woman, æt. 28, the mother of two children, who, while lifting a weight in her third pregnancy, was sensible of great pain followed by inability to pass urine. She was seen on the 26th of August by M. Wittich. The bladder was excessively distended, the fundus uteri thrown back into the hollow of the sacrum, and the os not to be reached. Attempts were immediately made to restore the uterus to its place, the bladder having been previously emptied; but, though repeated for several days, the reposition could not be effected. On the 3d of September ergot of rye was given to induce expulsion of the ovum, and on the 5th the attempt was made to perforate the membranes. On the 6th the womb was replaced by passing the finger into the rectum. The bladder being relieved, expelled a large quantity of fætid flaky urine, and on the same evening a portion of membrane was expelled, which was recognised as a portion of the muscular coats of the bladder. At midnight abortion took place.

This case is reported not so much on account of the retroversion, but as a rare instance of recovery after severe injury to the urinary bladder.

9. *Cauliflower Excrescence.*—Communications on this disease have recently been published by Dr. Eben Watson† and Mr. Tuffnell‡. The former describes the chief questions connected with the pathology of the disease. In reference to one of these, the relative value of ligature and excision, the author adduces strong evidence in favour of the latter, shewing, that of seven cases in which ligature was used, one died of metritis, and the other six all relapsed, while of nine cases of excision three only relapsed, the other five were cured, and one remained doubtful. The author's opinions on the pathology of the disease are expressed in the subjoined conclusions:—

1. The progress of the disease is slower than that of any of the malignant diseases, such as encephaloid, or uterine hæmatoma.

2. The usual age of the patient is different to that at which cancer shows itself. Thus of 19 cases of cauliflower excrescence, the average age was 37, eleven being much younger; while of 19 cases of cancer, the average age is beyond 40.

3. The cachexia peculiar to cancer is not present in cauliflower excrescence, although the subjects of the latter become anæmic from the effects of the discharges. They also often bear children, and recover from their labours, even in the advanced stages of cauliflower excrescence.

4. A remarkable circumstance is, that during the whole course of cauliflower excrescence, pain is seldom complained of. The reverse is the case in uterine cancer.

5. The disease is not malignant, inasmuch as the microscope fails to discover the true cancer-cell.

—Mr. Tuffnell's case is one in which a fungoid mass, called cauliflower excrescence, was removed by ligature, with the effect of materially improving

* Archives Générales, Edinburgh Monthly Journal, and Provincial Medical Journal.
† Edinburgh Monthly Journal, Nov. 1849. ‡ Dublin Medical Press, Dec. 26.

the patient's health; the surface from which it was removed did not, however, cicatrise, but fungoid granulations sprouted whenever the use of escharotics was laid aside. [We do not regard this case as one of true cauliflower growth, inasmuch as cancerous deposit was found in the uterus and bladder, the cancer-cells were also found in the mass removed. The possibility of exhibiting the preparation is also against this opinion, as true cauliflower excrescence after death shrivels into a mere membrane, very different from the appearance described. The disease, in our opinion, was true fungoid cancer, a disease very often mistaken for cauliflower excrescence.]

10. *Polypus; Passages of, through the Abdominal Parietes.*—A case regarded as unique has been reported by M. Loir. The subject was a woman, æt. 51, of robust constitution. She came under M. Loir's treatment in May 1847, for menorrhagia. On examination, the womb was found considerably enlarged above the pubes, while a polypus projected into the vagina. This came away, on an attempt being made to ligature it, and the bleedings ceased. The bulk of the womb, however, remained the same, and on the 19th some expulsive pains set in; but the os uteri, instead of dilating, became more contracted. The anterior portion of the uterus after this became more prominent, eschars followed on the abdominal parietes, and finally a black fœtid mass was protruded, which after death was found to be a polypus attached to the inner surface of the uterus. This case, though rare, is not unique, three similar being known—one related by Roux, in his 'Memoir on Fibrous Tumour of the Uterus;' another by Ricord, and a third by Lisfranc. In these, however, the polypus took a different direction in its progress externally.*

§ III.—*Diseases of Pregnancy—Labour—the Puerperal State.*

11. *Pregnancy in a Female who had never menstruated.*—The details of a case of this nature were presented to the "*Société d'Emulation.*" The female was aged 35, and the mother of three children. She had never menstruated or had any vicarious discharge. The lochia appeared normally after each confinement.†

12. *Chlorosis of Pregnant Females.*—In a paper recently read before the Academy of Medicine of Paris, M. Cazeaux discussed an important pathological question. Pregnant women are subject to a sanguineous plethora, which is looked upon as a frequent cause of the vertigo, dyspnœa, somnolence, and other symptoms, which they complain of about the fourth or fifth month. For this the remedy usually administered is venesection. To these ideas M. Cazeaux opposes the assertion that the symptoms are due to chlorosis, and not to plethora. This opinion he endeavours to establish on the following considerations:

1. The chemical analysis of the blood of pregnant women by Andral, Gavarret, Becquerel, and Rodier, prove that there is a diminution of globules, and an increase of the proportion of water. The existence of the buffy coat, they explain satisfactorily, by the fact, that the proportion of fibrine is not diminished. The proportion of iron is likewise ascertained to be diminished. From this M. Cazeaux concludes, that in pregnancy the blood is modified in a manner analogous to that of chlorosis.

* British and Foreign Medico-Chirurgical Review, April 1850.

† American Journal of the Medical Sciences, April 1850.

2. The functional disturbances of pregnancy, hitherto attributed to plethora are the same as those of the chlorotic condition; such are loss of appetite, depraved taste, nausea, vomiting, &c.; headache, neuralgia, palpitations, &c.

3. The evidence afforded by treatment. A generous diet, with the administration of iron, have always succeeded in the hands of M. Cazeaux. Bloodletting he rarely has recourse to, and then only in very small quantities.*

13. *Abortion, Tetanus after.*—Cases of this rare sequence of miscarriage are related by Dr. A. Wood and Dr. Malcolm. Dr. Wood's case is as follows:

Mrs. C., æt. about 36, stout make, florid complexion, after menstruation had been obstructed for three months, was seized, on the 16th of November, 1845, about three A.M., with copious coloured discharge from the vagina without pain. When seen at seven A.M., countenance pale; pulse quick and weak; discharge abundant, and mixed with coagula; uterus enlarged; os uteri flattened, and slightly open. The vagina was plugged, and sugar of lead and opium were given. The plug was removed in two hours by the nurse, on account of the uneasiness which it caused. On the 17th, the discharge, which had been abundant all yesterday, increased to-day, and was accompanied with large quantities of coagula; os uteri sufficiently open to admit the finger; the uterus seems full of coagulated blood. Under treatment the discharge abated, and in a few days she was so far recovered that Dr. Wood took leave of her. On November 23d, he received a hurried message to see Mrs. C. in the evening, but being detained with a bad case of labour, did not see her until November 24th, at seven A.M. He found that the bowels had not been open since the 25th; had been complaining all day of stiffness of the jaws and sore throat, for which Dr. James Simpson, the family medical attendant, who had seen her in his absence, had prescribed fomentations of camomile flowers. The stiffness of the jaws was considerable, and they were opened with such difficulty, that it was impossible to see the throat; pulse 80, soft, and compressible. In the forenoon the bowels were freely opened by a turpentine enema; the stiffness of the jaws had, however, increased; acute pain in the spine was complained of; the abdominal muscles were stiff, and the swallowing difficult. A sedative draught was now administered. On again visiting her in the evening, Dr. Wood found that no relief had been obtained from the draught. She had had a tetanic spasm at six P.M.; and while visiting at seven P.M. a second occurred. She could no longer swallow. Professor Syme was now consulted. Injections with tobacco, Indian hemp, and opium were prescribed, but the convulsions continued to increase in frequency, and she died at ten A.M. on the 26th.

—In Dr. Malcolm's patient, tetanus supervened upon a severe attack of cynanche tonsillaris, with which the lady was seized upwards of a fortnight after she had suffered from abortion at a very early period of pregnancy, and from which she had satisfactorily recovered. When Dr. Malcolm was first called to see this lady, she was suffering from inflammation and ulceration of the cervix, but had not the least suspicion of being in the family way. The treatment of this state of the uterus was commenced in the usual manner. In a few days, however, she was taken with the symptoms of abortion, which speedily followed. In the course of about a fortnight, she had recovered so far that the usual daily visit was discontinued. About this time, having taken some liberty with herself, she caught cold. The cynanche tonsillaris was severe; and on the second day it was accompanied, as often happens, with inability to move the jaw. On the third day, the symptoms were all

* Archives Générales, Mars 1850.

very much aggravated, but presented no peculiarity. On the fourth day, she still continued very feverish and ill, and about noon she was seized, for the first time, with general tetanic spasms. She was seen in this fit by several physicians in the absence of Dr. Malcolm. When Dr. Malcolm called the fit had ceased. After two hours the tetanic spasms returned with increased violence, and did not cease till she died, in the course of a few minutes.

14. *Labour and its Complications.—Obstruction from Posterior Displacement of the Arm.*—At a meeting of the Edinburgh Obstetrical Society, Dr. Simpson called attention to an uncommon form of obstruction in head presentations. The form of obstruction consisted in one of the arms of the infant being displaced backwards across the neck or occipital region; or more properly speaking, it was the forearm that was thus thrown across the back of the head and neck, the arm being thrown upwards in a line with the body, in order to admit of this malposition of the forearm. In this abnormal position the displaced elbow and forearm of the child, first increased greatly the dimensions of the basis of the head; and secondly, these same parts formed a kind of projecting obstruction, which readily hitched and caught upon the brim of the pelvis, thus preventing the descent of the head. But the effects might be better judged of by detailing the case itself.

The patient had previously borne nine children. All the labours had been easy, and she had frequently been delivered so speedily, that the labour was over before the medical attendant could reach the house. In her last and tenth labour, pains came on about four in the afternoon, and the os uteri was not completely opened up till about ten o'clock. About an hour before, the membranes ruptured. At six next morning, Dr. Simpson received a note from her medical attendant, Mr. Carmichael, asking him to see her, as the head had remained in the same position at the brim for several hours, the uterine contractions were becoming weak, and the woman herself exhausted. On placing the patient deeply under the influence of chloroform, in order to make a complete examination, Dr. Simpson found the maternal passages perfectly relaxed and open, and the head of the child to be by no means large, and not even entirely filling up the brim. The vertex presented, and the face was directed towards the left sacro-iliac synchondrosis,—a rare enough position, but one not in any degree calculated to account for the delay. On passing the examining fingers farther upwards, in order to trace any possible obstruction, Dr. Simpson touched a projecting body (the elbow) beyond the left ear of the child; and on now making the examination more carefully, he traced this body backwards across the neck of the infant, and found it to consist of the left forearm of the child thrown back posteriorly behind the head. Dr. Simpson then brought the hand downwards and forwards, believing that if it were converted into a head and arm presentation, the case might terminate without further interference. During the next half hour, however, the pains, which had for some time been weak, had little effect in forwarding the presenting parts, and as the child's heart had now sunk as low as 78 beats in the minute, Dr. Simpson, in order to preserve the child, again chloroformed the patient deeply, and delivered the child by podalic turning. The mother made a speedy recovery. The child soon cried strongly, and goes on quite well. Its left arm was for a day or two after delivery easily thrown into the position described. The occipito-frontal circumference of the head was afterwards measured by Mr. Carmichael, and found to be $14\frac{1}{4}$ inches; when the arm was placed in its anomalous position,

* Edinburgh Monthly Journal, March 1850.

the same circumference measured 15½ inches. The circumference of the shoulders was 13½ inches. The child was of about the usual size, and weighed 7¼ lbs.

The *Treatment* of such a cause of obstruction, when it was once recognised, should probably consist of bringing the hand downward and forward over the side of the head, so as to convert the case into one of simple presentation of the head and arm. Perhaps it might occasionally be possible to push the elbow forwards in the direction of the lower end of the sternum, and thus draw back the displaced arm into its normal position in front of the chest. If either of these measures proved impossible, or failed, then the podalic version would be required.

The *Diagnosis* of the case was the most difficult point in its management. And in this, as in other complications—as detention from intra-uterine hydrocephalus, &c.—the assistance of anæsthetics in midwifery was invaluable as a means of enabling the accoucheur to make a far more effective, and searching, and successful manual examination and diagnosis, in cases of obstructed labours, than it was possible to do when the patient was awake and incapable of bearing with steadiness, and without unnecessary suffering, the introduction of the hand for the purpose.

When a labour, as in the preceding case, notwithstanding steady and continued uterine contractions, becomes morbidly prolonged in a mother who had previously borne easily a large family, there was every probability of obstruction of some kind on the part of the infant. Dr. Simpson had seen two such cases, where the detention was the result of intra-uterine hydrocephalus. In the present instance it was the result of the malposition of the hand. Some time since he had mentioned to the Society two cases of tedious labour, which, several years ago, he had seen with Dr. Ziegler: in both, the head, despite of strong pains, remained in the pelvic brim without descending; in both the head was evidently not disproportionately large to the maternal passages; in both some point of the shoulder or arm could be touched by the finger on examination; and, perhaps, if the examination could have been made more complete by the use of ether or chloroform, which were then unknown, a malposition of the arm, similar to the one above described, might have been detected. Various cases are recorded of obstructed labours, with the head, as usual, presenting, in mothers who had previously had natural deliveries, and where the forceps failed to extract the child, and where even extraction after craniotomy was difficult. Some of these cases were. in all probability, instances of obstruction from dorsal malposition of the arm, or rather of the forearm. The late Dr. Campbell, shortly before his death, told Dr. Simpson of a case where there was no pelvic or other deformity on the part of the mother, no want of uterine contraction, and no disproportionate size of the head of the child, and yet he and others had entirely failed in extracting the detained infant by the forceps, and at last were obliged to open its head.

When looked for, Dr. Simpson believed, therefore, that the dorsal malposition of the forearm would be found a more frequent cause of obstructed labour than the total silence of obstetric authors on the subject might, *à priori*, lead us to suppose. Further, he considered the present case as interesting, not only as an instance of an undescribed species of malposition and obstruction, but probably as one of a new *class* of malpositions as yet unrecognised in any of our accounts of the mechanism of labour, and the malpositions of the child. It would probably be found that other degrees and forms of malposition of the arm might occasionally lead to the same result.

15. *Obstructed Labour from Stricture of the Uterine Parietes round the Child's Neck.*—At the same meeting, another form of impediment to labour was alluded to by Dr. SKAE, consisting in an accidental stricture of the walls of the uterus. The patient in whom it occurred complained of a feeling of tightness across the lower part of the abdomen during the last three months of gestation, and had a strong impression on her mind that all was not right with her, for she had on no former occasion experienced the same feeling, although she had had a large family, and once or twice twins. The particulars were as follows:

Dr. Skae was sent for by Mrs. C. on the morning of Tuesday, the 12th of June last, as she thought herself in labour. Examination discovered no indication of incipient parturition, and an opiate, followed by castor oil, was prescribed, on the supposition that the pains, which were said to have been steady and severe for some hours, were of the ordinary character of the spurious pains which so frequently precede labour. Notwithstanding repeated opiates, however, the pains abated but little during the subsequent forty-eight hours, when dilatation of the os uteri began to show itself. During the whole of Thursday the 14th, labour progressed favorably, so far as dilatation of the os was concerned; but it was only about four or five o'clock that the presentation could be distinctly made out, when the head could be found to descend to the brim during the pains. The patient continued suffering, apparently from severe labour pains, with but little change in the position of the fœtal head till past midnight. The head descended, during the pains, to the brim of the pelvis, but never entered it, although an attempt was repeatedly made to steady it in its most favorable position for descent. Œdema of the os uteri now showed itself, and the strength of the patient began to flag. Dr. Skae therefore made two or three attempts to bring her under the influence of chloroform, but unsuccessfully, for she resisted with all her strength, being firmly determined not to take it; and his only assistant was an elderly female, who was worse than useless from alarm and agitation. By this time he felt satisfied that the obstruction to labour must be of some unusual kind, for the pelvis was large and well formed, and the size, firmness, and configuration of the child's head opposed the idea of hydrocephalus. He therefore sent for Dr. Simpson at two A.M., and they succeeded in speedily putting her under a full dose of chloroform, when the cause of obstruction was found to depend on the presence of a rigid stricture, situated in the lower third of the uterus, upon which rested the shoulders of the fœtus. After administering 120 drops of sol. mur. morphia, and keeping her pretty deeply under the influence of chloroform for two hours, it was found that no material relaxation of the stricture had taken place, to admit of turning without endangering the integrity of the uterine walls. It was feared that evisceration might be ultimately necessary, but employment of the long forceps was resolved upon, notwithstanding the unusual difficulty of applying them so high up, as necessarily to require their being locked within the vagina. Dr. Simpson, however, with his accustomed tact and dexterity, succeeded not only in applying them, but also in accomplishing delivery in some fifteen or twenty minutes, by dragging the shoulders of the fœtus through the stricture. In this case both mother and child did well, the recovery being unattended by any unfavorable symptoms.*

16. *Calculus Vesicæ obstructing Labour—Operation.*—M. MONOD met with the case of a woman, æt. 40, primipara, whose labour did not advance on account of a large tumour in the anterior wall of the vagina. The tumour

* Reported in the Edinburgh Monthly Journal.

was hard to the touch, and completely filled the entrance to the vagina. From its form, position, &c., it was readily recognised as a vesical calculus. A sound, passed into the bladder with difficulty, confirmed the diagnosis.

M. Monod, finding that the operation of lithotrity was inapplicable, at once proceeded to remove the stone by an incision into the walls of the tumour. A curved bistoury, guided by the forefinger of the left hand, was passed into the vagina, and an incision made into the tumour. The stone was removed by the finger only; it weighed nearly three ounces; its surface was irregular, and its form that of a shallow bowl.

The patient had been previously chloroformised, and, as the state of insensibility continued after the removal of the stone, the forceps were employed to complete the delivery. The child breathed, but died in a few seconds, death being attributed to the pressure of one blade of the forceps on the umbilical cord, which was twisted round the neck.

The patient recovered without an untoward symptom. The urine passed by the urethra on the following day. This M. Monod explained by supposing a swollen condition of the edges of the wound, produced by the manipulation necessary for the removal of so large a calculus through an aperture so small as he had made.*

17. *Obstructed Labour from Distended Fœtal Bladder.*—In a memoir presented to the Academy of Medicine, M. Depaul investigates the above unlikely cause of impediment to parturition; his conclusions we subjoin:

1. The urinary secretion takes place at an early period of fœtal life. 2. When a congenital defect, or any other cause, prevents the excretion of urine, which at this period can be poured only in the cavity of the amnios, it accumulates in the bladder, which latter may then become greatly distended, and acquire such dimensions that easy parturition is impossible, even where the pelvis is well formed, and though pregnancy may have run through all its stages. 3. The difficulties which such a state of things may give rise to are such that the head has been torn off, without the obstacle being overcome. 4. Whenever the parts have been carefully examined, it has been shown that the development of the urinary receptacle coincided with hypertrophy of its parietes, especially of the muscular coat; a circumstance which, added to many others, proves that the bladder acts not only as a passive reservoir, but that that organ makes often renewed efforts, through the whole course of gestation, in order to expel the liquid which it receives. 5. If the consideration of the preceding facts shows that it is almost impossible to recognise, during gestation, such a defect of conformation, there is no doubt that, during parturition, a very good guess may be made regarding this defect. 6. Though unusual phenomena observed during gestation (which may, however, be caused by various pathological changes) ought to be taken into account, it is nevertheless incontestable, that the hand introduced into the uterus can alone give the clue to the real state of things, or will at least allow the certainty to be made out, that a collection of liquid exists in the child's abdominal cavity. 7. The great rarity of simple ascites, carried to this extreme degree, will be a presumption of the bladder being distended; and if the exploration of the genital organs allowed those congenital defects, mentioned before, to be traced, a retention of urine might unhesitatingly be diagnosed. 8. In both cases, however, the accoucheur must act in a similar manner. When moderate tractions have no result, efforts should be directed to the evacuation of the liquid. Of all the means which may be used, this is the simplest in its application, and will be the least dangerous to the mother in well-practised hands. 9. As it

* L'Union Médicale.—Medical Gazette, March 20, 1850.

has been shown that the changes in the urinary organs, which have just been treated of, do not necessarily endanger the viability of the child, the indication is to puncture the bladder with all the care such an operation requires in the adult. The implantation of the cord will be a sure guide for the choice of the most favorable spot. 10. It is not impossible that a new operation after birth might re-establish the natural passages for the excretion of urine, and thus preserve children who, without that precaution, must inevitably have been sacrificed.

18. *Uterine Hemorrhage.*—M. Dubois has furnished the following practical observations on post-partum hemorrhage. He first notices the organic conditions which oppose hemorrhage. These are stated to be—

I. The contraction of the uterine walls, which considerably diminishes the capacity of the vast vascular apparatus developed in the substance of the uterus under the influence of pregnancy.

II. The absence, from the uterine cavity, of the living organism, which constantly attracted the blood towards itself, and consequently towards the uterus.

III. The increase of the natural tortuosities of the uterine vessels, in consequence of the contraction of the uterine walls.

IV. The obliteration, by small clots, of the extremities of the tortuous utero-placental arteries, which remain upon the internal surface of the uterus after the expulsion of the placenta.

Of these causes, the most efficient is, beyond a doubt, the complete expulsion of the ovum, because by this means is removed from the uterus the stimulus which attracted the blood towards it, and the organ diminishes considerably in bulk in contracting upon itself.

Hemorrhage after delivery, he next observes, may be the result of the following causes:

1. The presence of the placenta, or of large clots of blood in the uterine cavity, which in some sort take the place of the ovum, stimulate the afflux of blood, irritate the uterus, distend it, and prevent its contracting upon itself.

2. The failure of the contraction of the uterine fibres, uterine inertia, a cause which most accoucheurs consider the most frequent of these hemorrhages.

3. Independently of other causes, we ought to admit, in certain cases, that, resulting from the force of the abnormal impulse of the blood received by the uterine vessels—a force which is occasionally abnormally strong, and causes the blood to pass beyond its proper limits—namely, the point where the vessels have been ruptured. In fact, we observe, after the rupture of the utero-placental vessels, the same phenomena as take place after section of the umbilical cord. Ordinarily, as soon as the cord is cut, the blood ceases to flow towards it, and none comes to be discharged at the point of section; but in certain exceptional cases, the force of the impulse of the blood being too great, that fluid continues to flow towards the cord, and passing the limit of the point of section, is discharged externally; in the same manner, after the rupture of the utero-placental vessels, the blood ceases to flow towards them with the same force, except in some cases where the blood, retaining a great force of impulse, passes the ruptured extremities of the vessels.

In all severe external hemorrhages, there is, at the same time, accumulation of blood internally. The one is recognised by the abundant discharge of blood externally, the other by the rapid loss of strength, and the increase of the size of the uterine tumour, accompanied by a feeling of heat over the whole

* Reported in Lancet, June 1.

abdomen. It is not to be supposed that the uterus can be so distended by the accumulation of blood as to acquire the bulk of the pregnant uterus at the full time; neither is it the case, as is stated in many treatises on midwifery, that the uterus in these cases remains soft, and allows itself to be distended like a bladder. On the contrary, the uterine fibres having come together upon themselves during labour, cannot be again distended without reacting and contraction following. If the abdominal parietes are not overloaded with adipose tissue, the contractions may be felt through them. These contractions have power sufficient to prevent the excessive distension of the uterus, although they may not be so strong as to expel the clot.

To arrest the discharge of blood is the first and chief object of treatment. For this purpose a number of means have been proposed, which may be arranged in two classes. In the first are placed all those which produce contraction of the walls of the uterus, and consequent diminution of the caliber of its blood-vessels; in the second are placed the means by which (those of the first class failing) the vessels circulating the blood may be acted upon, and the current of blood in them diminished or arrested. Lastly, there may be added the use of opium in large doses, as proposed by Duncan Stewart.

The means of the first class are—

1. Friction and other manipulations on that part of the uterus which is accessible to the hand through the abdominal walls, for the purpose of irritating the uterine walls, and causing their contraction.

2. The introduction of the hand into the uterine cavity, both for the purpose of removing the clots, and in order to irritate the uterus, so as to bring on contraction in it by prolonging the continuance in its cavity of a hard foreign body, having active and irritating movements.

3. Refrigerants, used either externally, by applying cold cloths or the cold affusion; or internally, in the form of injections of iced water, or of vinegar and water, into the vagina and uterus.

4. Refrigerants introduced into the intestinal canal, whether as cold drinks into the stomach, or cold lavements into the rectum.

5. The introduction of astringent, or even mild, caustic substances into the uterine cavity, such as vinegar, lemon-juice, solution of alum, solution of sulphate of iron, &c. &c.

6. Galvanism applied to the internal surface of the uterus.

7. Lastly, ergot of rye, probably the most efficient of all these means.

The means of the second class are—

1. The application of a binder, properly tightened around the abdomen, to afford a firmer support to the uterus in its contractions, by augmenting the force of the abdominal walls.

2. Direct pressure applied to the extremities of the vessels pouring out the blood, by means of the hand introduced into the uterine cavity.

3. The use of the plug, as recommended by Leroux, who employed it with success, as a means of directly favouring the coagulation of the blood in the vessels. This plan certainly does not possess the value attached to it by Leroux.

4. Compression of the great vessels which bring the blood to the uterus. This may be effected in various ways, as by compressing indirectly the uterine vessels, by the application of the hands upon the abdominal walls, or of a bandage well tightened around the abdomen; or by compressing indirectly the great vessels, and in particular the aorta, by pressing the uterus with the hands firmly against the anterior surface of the vertebral column; or, lastly, by compressing the aorta directly through the abdominal walls, by means

of the fingers applied firmly against the vertebral column above the uterine tumour.

In the last place, it is necessary to mention the use of large doses of opium,—a practice in some degree empyrical, but which has been found sometimes successful, although it cannot be considered as generally sure and efficient.

Of these numerous means which have been proposed,—which are beneficial, and which are useless or injurious?

Cold injections into the uterine cavity should be completely laid aside. Madame Lachapelle, who had frequently employed them, gave them up entirely, having remarked that women submitted to this treatment were frequently seized with fits of shivering shortly after. This means, then, is not innocuous, and ought to be laid aside.

Astringent injections into the uterine cavity should be laid aside for the same reason.

Cold lavements may have some tonic astringent action transmissible to the genital organs from the rectum; but this action is necessarily very temporary, and altogether insufficient to arrest the flow of blood. Further, the use of this means necessitates a certain disturbance of the absolute repose, in the horizontal position, which the woman ought to maintain. This plan, then, should also be laid aside as unsuitable and inefficient.

Substances saturated with astringent liquids, as sponges or compresses dipped in vinegar, lemon-juice, or most astringent fluids, should be completely rejected, as being dangerous. Their introduction into the uterine cavity necessarily irritates the internal surface of the organ, and may be the cause of some puerperal inflammation. From this condemnation lemon-juice must be excluded, seeing that it has been employed with frequent success by accoucheurs of distinction.

Galvanism applied to the internal surface of the uterus has sometimes been employed with advantage, but it is a means difficult of use in ordinary practice.

Tight bandaging of the abdomen, recommended by accoucheurs of great experience, has certainly some value; but it is of little utility, as it completely prevents the regular use of refrigerants, which are far more useful.

Compression of the vessels on the internal surface of the uterus by means of the hand, is not efficacious in arresting the flow of blood. In this way, all the vessels are not compressed. And further, the proper contraction of the uterus is prevented by the presence of the hand. This mode of compression, then, should be completely laid aside.

The plug, recommended by Leroux, an experienced physician of Dijon, is a plan the value of which ought to be carefully considered. M. Velpeau distinctly approves of its use in certain cases of post-partum hemorrhage.

As used in the present day, the plug is so applied as to close the mouth of the uterus, and consequently retain the effused blood within the uterus. This retained blood is the only obstacle to the continuance of the hemorrhage. Now, this obstacle is very slight, and quite insufficient to close the vascular orifices completely. In spite, however, of what theory teaches, there are numerous cases to prove that the use of the plug is often successful. Nevertheless, the facts and the theory are not contradictory of each other. The apparent discordance between them is explained by considering the nature of the plug used by Leroux of Dijon, in his successful cases. Leroux saturated a piece of lint in vinegar, and introduced it into the uterine cavity; then he placed another piece of lint, similarly saturated, in the vagina. This plan has little resemblance to the mode of plugging practised in the present time,

—a plan which would have no effect, but to change an external into an internal hemorrhage. The use of the plug, then, should be completely laid aside.

The last mode of treatment, of which M. Dubois condemns the use, is the administration of opium in large doses.

The following are the means specially recommended by M. Dubois:

1. To lay the woman in a horizontal position, on a somewhat hard bed, and to have the pelvis a little elevated above the level of the rest of the body.

2. To maintain in the apartment a cooling atmosphere, at as low a temperature as possible.

3. If the uterus is more bulky than it ought to be, to introduce the hand into its cavity, to bring on contraction by means of slight frictions, and to remove the clots frequently contained in it.

4. To induce uterine contractions, by constantly rubbing the surface of the abdominal parietes.

5. To apply at the same time, to the hypogastrium, cloths saturated with cold water.

6. At the same time, also, to administer two or three drachms of ergot of rye, in four or six doses, at intervals of five minutes.

7. Lastly, if all the preceding means are insufficient to arrest the hemorrhage, to compress directly the aorta.

—Cases have recently been recorded by Dr. Tyler Smith * and Mr. Chavasse,† and others, pointing out the indubitable advantage of injecting the uterus with cold water, in cases of serious hemorrhage. The instances related exhibit the benefit of the practice in a very satisfactory manner.

19. *New Method of plugging the Vagina.*—This novel plan of arresting uterine hemorrhage consists in the use of a bladder of vulcanised India-rubber, having attached to it a long pipe of the same material. When empty and compressed, as for introduction into the passages, it is not larger than the finger. After its introduction, the mouth is applied to the end of the long projecting pipe, and the caoutchouc bladder in the vagina is inflated to any extent deemed expedient. Nothing is required to keep this instrument in its place; its size, when inflated, and its adaptation in shape to the cavity of the vagina, are sufficient for this purpose. In a case which M. Diday has recorded, he made use of this instrument for sixty-four hours, and although, during all that time, it was lying among the warm and decomposing blood in the vagina, it lost none of its original power.

M. Diday proposes to use his newly-discovered instrument in cases of post-partum hemorrhage, introducing it into the uterus itself, and there inflating it. He thinks that this will have a beneficial effect, although he knows the danger of internal uterine hemorrhage, and the evils consequent on using a vaginal tampon in cases of flooding after labour at the full time.

The editor of the 'Monthly Journal,' in commenting on this proposal, remarks that it is only a new mode of applying the old suggestion of using bladders injected with cold water; and that it would be dangerous to trust to it.‡

20. *Rupture of the Uterus.*—Some interesting examples of this severe accident have been recorded during the past six months.

—Mr. Long narrates an instance in which the Cæsarean operation was performed. The details are as follow:

At four o'clock on the morning of the 15th of January, Mr. Long was

* Lancet, July and Dec. 1849. † Ib. ‡ Edinburgh Monthly Journal.

called on to visit Mrs. D——, æt. 46, who was then in labour of her fourth child. He had attended her on two former occasions, when the forceps were necessarily used: both children were born alive, and one is still living, eight years old.

On his arrival, he was informed that the waters had burst early in the preceding evening, and that about nine o'clock at night, after three or four quickly succeeding pains, the child's head had descended and pressed on the perineum, when it suddenly receded and could be no longer felt; that one or two large coagulæ of blood had been expelled, but that all labour-pains had ceased.

He found the woman (she was strong and powerfully built) suffering from attacks of the most excruciating pain in the *upper dorsal region*, recurring at intervals of five or ten minutes, described as if the *spine were sawn asunder*. There was no prostration of strength, or collapse of the features; the pulse was 100, tolerably firm; incessant thirst; no action from the kidneys or bowels for several hours.

On examination, there was no presentation to be felt; and on introducing the hand, the os uteri was found perfectly closed, not yielding even to considerable force: there was not the least trace of hemorrhage.

From these circumstances, and the history Mr. Long received, he at once judged that the uterus had given way at its fundus, and that the child had been expelled into the cavity of the abdomen. The latter fact could not be certainly ascertained by external examination of the abdomen, on account of the extreme thickness of its walls from muscle and deposition of fat.

He requested the assistance of Dr. Mackesy, of Waterford, but this was not obtained until late in the evening of the 15th. Meanwhile, the condition of the woman was but little changed; the pulse was unaltered, nor was there any suffering save the constantly recurring sawing pain in the dorsal region.

It was now agreed, in consultation, to inform the friends, and subsequently the woman herself, that if left as she then was, she must die in a few hours; but that if the child was extracted by section of the abdomen, she had still a chance of surviving. They decided on taking the chance.

An incision, commencing at the umbilicus, was carried downwards in the linea alba, about four inches. A few strokes of the scalpel brought the posterior parts of the child into view; it was easily and quickly extracted, together with the placenta; both being found expelled from the uterus, and the latter well and firmly contracted. There were about twenty-two ounces of blood, also, contained in the abdomen: all were removed, and the incision brought together by six stitches of the interrupted suture, the whole supported by straps of adhesive plaster, and a tailed bandage. There was no hemorrhage from the wound.

The operation was borne well; pulse 132; an anodyne draught was administered, and perfect quiet and the strictest abstinence enjoined.

17th. Owing to distance from the patient, and other unavoidable circumstances, Mr. Long did not see her until to-day. He found that she had had some refreshing sleep; that the bowels were moved by enemata, and urine removed by the catheter; pulse 120, feeble and compressible; tongue brown and dry; *lochia* free, and natural in appearance; abdomen tympanitic; not very tender to the touch. The principal complaint made was of a dry hacking cough; breathing greatly oppressed. A large blister was applied to the breast, and half a grain of calomel, one eighth of a grain tart. ant., and one fourth of a grain of opium, given every second hour.

During the day the bowels were naturally evacuated, as was also the bladder.

The pulse rose to 140; the countenance became intensely anxious, and there was incessant jactitation.

The dressings were now removed, and the incision of the abdomen found firmly united in the entire *lower* two thirds of its extent. Immediately beneath the umbilicus, the incised part was plugged with a portion of apparently omentum in a gangrenous state. There was but little complaint made of suffering, unless from the hacking cough and dyspnœa. She rapidly sank and died on the morning of the 18th. There was no post-mortem examination permitted.

Notwithstanding the magnitude of the injury here sustained, Mr. Long was convinced that had the woman enjoyed the benefits of a regulated temperature, and the other advantages of regular attendance, which an hospital might have supplied, she would have survived.*

—Mr. Stobo has recorded an instance of recovery after rupture of the uterus. The nature of the accident was indisputable, as the author felt the intestines through the rent.†

—A remarkable and perhaps unique example of rupture of the uterus is narrated by Dr. M. Stoltz, in which the entire ovum escaped into the abdomen at full term. The woman died of hemorrhage.‡

21. *Puerperal Fever, Causes.*—Some additional cases have been adduced by Dr. Hill, in corroboration of the now generally received opinion of the connexion between puerperal fever and erysipelas.§

22. *Entrance of Air into the Uterine Sinuses, considered as a cause of Danger after Parturition.*—This is the title of an interesting and ingenious paper lately presented by Dr. Cormack. The essay consists of three parts:—1. The various effects caused by the entrance of air into the veins, and the appearances found on dissection. 2. Statement of facts proving that the entrance of air by the open mouths of the uterine veins may cause dangerous symptoms, and even death. 3. Suggestions as to the prevention and treatments of such accidents after parturition; with remarks upon the precautions required in injecting the uterus after delivery for uterine hemorrhage. The opinion, that the entrance of air into the uterine veins might be a source of danger and death after parturition, had been enunciated by Legallois in 1829, and subsequently by Ollivier: it had likewise been supported by Dr. Cormack in his 'Graduation Thesis,' published at Edinburgh in 1837. Dr. Cormack had attended cases in which air had been drawn into the womb after delivery by the sudden relaxation of the organ, and occurrences of this kind he supposed must be frequent. Dr. Cormack quoted Dr. Meig's very graphic description of the way in which air was often drawn in and then expelled with noise by the womb after delivery, Dr. Cormack wished to prove that if any impediment existed to prevent the exit of the air which had been drawn in, it must, when the uterus acted, be thrown into the large orifices of the uterine veins, provided they were not secured by coagula or by the apposition of their parietes from contraction of the organ. He also showed, by anatomical facts, and by referring to the experiments made by Dance, that the communication between the cavity of the womb and the current of blood in the vena cava inferior was direct and easy, and that air once introduced into the uterine veins must soon be carried to the right auricle of the heart; there—if in sufficient quantity—to cause frothing of blood, aeriform distension of the right side of the heart,

* Dublin Medical Press, April 17, 1850.
† Medical Times, April 6, 1850.
‡ Gazette Médicale de Strasbourg.
§ Edinburgh Monthly Journal, March 1850.

obstruction of the pulmonary artery, and congestion of the pulmonary capillaries. Cases of this kind had actually taken place. One had been published by Lionet, and another by Wintrich. A case had also been published by Dr. Bessems, in which air had been thrown accidentally into the uterine veins when injecting the uterus to arrest hemorrhage. The woman died suddenly with symptoms of suffocation, and the right side of the heart was found distended by air. Dr. Cormack showed, by a detail of experiments which he had performed, and also by cases, that the entrance of air into the veins, even in considerable quantity, was not necessarily fatal. A case communicated by Sir B. C. Brodie to Dr. Cormaek illustrated this fact. The gencral treatment for uterinc hemorrhage, by inducing contraction of the uterus, also the plugging, would be the means by which the entrance of air into the uterine veins would be prevented. Should the accident occur, and the circulation and respiration become affected, and asphyxia be imminent, it would be necessary to unload the heart and pulmonary capillaries, by taking blood, following up the advantage so gained by aspersion of the face with cold water, the application of stimulating embrocations, sinapisms, &c., and the internal use of various stimuli. Dr. Cormack stated that in a case which he had watched for hours after the accidental entrance of a large quantity of air into one of the veins of the neck, no advantage was got from stimuli till the heart was somewhat relieved by vcnesection. This is the case which occurred at Barnes in 1848, and an account of the inquest on which appeared at the time in 'The Lancet.' In some cases, little or no treatment might be required. If the air was in small quantity, it would be absorbed, if the patient survived a sufficient time, and no bad consequences might ensue. At the same time, in some animals experimented on, Dr. Cormack found that though they recovered from the immcdiate dangcr, they ultimately died from pneumonia. The cases mentioned by Dr. Simpson, in a communication to the late Dr. John Reid, and published in his collected Memoirs, were examined, and stated to belong to a different class from those of Bessems, Lionet, and Wintrich.*

23. *Puerperal Convulsions.*—The samc writer has also contributed an excellent paper on the subject of puerperal convulsions, having their dependence on toxæmia, and explaining the more frequent occurrencc in primiparæ. He commenced by detailing three cases of puerperal convulsions, which had occurred in his practice. The main object of his paper was to point out the connexion which exists, in a very great proportion of cases, between rcnal congestion and puerperal convulsions. He considered puerperal convulsions to be—though not always, yet generally—the toxicological results of nonelimination of thc excretions of the blood; and that, in by far the greater number of cases, this non-elimination depends on renal congestion, caused by the pressure of the gravid uterus. Œdema and albuminuria are frequent concomitants or precursors of convulsions, as shown by Dr. Lever and MM. Devilliers and Regnault. The gravid uterus, or any tumour pressing on the renal veins, must cause congestion of the kidneys and consequent toxæmia; and this is the more injurious to the pregnant woman, as her blood rcquires an extra dcgrce of depuration, both from excrementitious matter from the fœtus, and also from the elements of thc milk. Retention of thesc should, Dr. Cormack thought, bc considered as the cause not only of convulsions, but also of various other distressing symptoms occurring in pregnancy. Uterine epilcpsy probably often arises from toxæmia; and the suppression of the lochia may induce post-partum puerperal convulsions. When convulsions recur *after*

* Lancet, April 13, 1850.

delivery, we must suspect structural renal disease. The explanation of delivery generally arresting convulsions, is not so much that uterine irritation is lessened, as that the hyperæmic state of the kidneys is relieved. The most common subjects of puerperal convulsions are strong, healthy young women, pregnant for the first time; and an examination of the cases recorded by authors proves this fact. In them, the abdominal walls are most unyielding, and unable to relax under the pressure of the gravid womb. Cases of puerperal convulsions in subsequent pregnancies might be either toxæmic or non-toxæmic. The toxæmic cases may be classed under the following heads:—1. Persons who have never gone to the full time; 2. Persons of extreme muscular development; 3. Persons suffering from structural disease, or obstruction of the kidney; 4. Excessive volume of uterine contents, including twin cases, &c.

24. *Ulcerations of the Vagina, connected with the states of Utero-Gestation and Lactation.*—Prof. Brainard states that the condition of the system which produces ulceration of the mouth in nursing women, likewise gives rise to a similar condition of the vaginal surface, and apparently of the small intestines. This condition, he says, is that of anæmia. "Those who have been bled often or confined to a low diet, or affected with diarrhœa, or frequently purged, are the persons affected. It is usually attended by a leucophlegmatic state, pallor of all the tissues, costiveness or diarrhœa, and frequent desire to urinate, with smarting pain on urinating. In the Western States the diarrhœa usually attacks persons recently arrived from the Eastern States or foreign countries, and is often persistent, and even dangerous. Women in the states of gestation, or nursing, who labour under this affection, are generally attacked with these mucous ulcerations."

The treatment most effectual, according to Dr. Brainard, is a general course of tonics—iron and the vegetable bitters—and with nourishing abundant food, with beer or water for drink, and free exercise in the open air. As a local application to the ulcerations of the mouth, no remedy deserves to be compared to the fuming muriatic acid, applied with a probe, piece of wood, or brush, to the ulcerated surface; it never fails to relieve when the ulcers are white and circumscribed. When there is a diffused redness and denudation, it should be diluted and used as a wash. Mercurials are especially to be avoided.*

25. *Craniotomy.*—Eight cases of this operation are recorded by Mr. Swayne of Bristol, with the main object of showing, that women may recover as well after protracted and instrumental labours as after ordinary ones, provided the use of instruments has not been too long deferred. In fact, the author believes that, in some respects, they may be said to recover better, as they are usually exempt from the after-pains which frequently produce so much discomfort after ordinary labours. He does not recollect that a single bad symptom occurred after either of the above eight cases. In this respect, they would seem to be exceptions to the general rule, which Dr. Simpson deduces from the statistics of protracted labour, viz., that the danger increases in a direct ratio with the length of the labour. Much stress has been laid on this rule in the arguments which have been used in support both of turning, and the Cæsarean section, as alternatives for craniotomy. The author thinks that the dangers of protracted labour have been over-rated; and that this arises from the nature of the statistical evidence upon which such conclusions

* American Journal of Medical Science, April 1850.

are based. A great number of the cases of protracted labour which have been put on record by different practitioners, are cases, many of which have been attended by midwives, and in which all the worst symptoms of powerless labour have been allowed to develope themselves, before the medical practitioner had been called in. The author accounts for the favorable results in his own cases by the fact that the operation of craniotomy was performed as soon as symptoms of powerless labour began to set in, such as considerable acceleration of the pulse, heat and tenderness of the passages, restlessness, anxiety, and marked diminution of the pains both in force and frequency.

The stethoscope will frequently show that in such cases the child has ceased to live before the operation is undertaken, and thus relieve the mind of the practitioner of all doubt as to the propriety of the step he is about to take; but, even then, as the author properly remarks, he who trusts to *his own* judgment alone for the decision of so momentous a question, incurs a heavy responsibility.*

26. *New Substitute for the Forceps.*—Having in a former volume mentioned Dr. Simpson's suction extractor, our readers may perhaps be interested in the description of another invention, having the same object, by Dr. EVANS of Chicago, U. S.

This extractor consists of two blades or fingers of steel that are exactly alike; each 11 inches long, 5 inches of which is handle and 6 inches finger; a sliding ring; a silk band passing from one finger to the other, 9 inches long by 1 inch wide; and 4 straps of silk braid passing from it downward between the fingers, 18 inches long, and $\frac{1}{3}$ of an inch wide. Between these straps and attached to the inferior margin of the band, is a net work 2 inches wide, made of silk braid.

The handles are $\frac{5}{8}$ of an inch wide, and $\frac{3}{16}$ thick, uniform and straight the entire length, so that a sliding ring can be passed over both when their edges are brought together, so as firmly to fix them side by side, as at G, cut No. 2.

The other part forms the finger which has a curvature to fit the convexity of the child's head. It is $\frac{1}{4}$ of an inch thick at the junction with the handle, for here the greatest strain comes on the instrument, but rapidly becomes thinner toward the end, until it is as much attenuated as it can be, to allow of two strong hinge joints (*b b*) in it. It tapers also in width from $\frac{5}{8}$ of an inch at the handle to $\frac{3}{8}$ at the end, where it is terminated by a ring, the hole (*a*) through which is $\frac{1}{2}$ of an inch in diameter. The edges of the fingers are rounded and the hinges made so that they present no roughness. They allow flexion enough to adapt the finger to any part of the head upon which it may rest at the time, and extension enough to make it as straight (A) as is desirable in the introduction of the instrument. The slide holds the handle and fingers parallel and firmly together, so that their ends cannot separate.

The band (D) or fillet is firmly attached to the end of each finger at the ring, and by a few drilled holes below it. This is the main part of the instrument, as the steel fingers are only used to pass it around the head and hold it there.

The net work (E) is designed to keep the band from slipping over the chin of the child and to keep the straps in their places.

The straps (*e e e e*) are firmly sewed to the margin of the band nearest the handles, and pass down so as to reach some distance below the ends of the

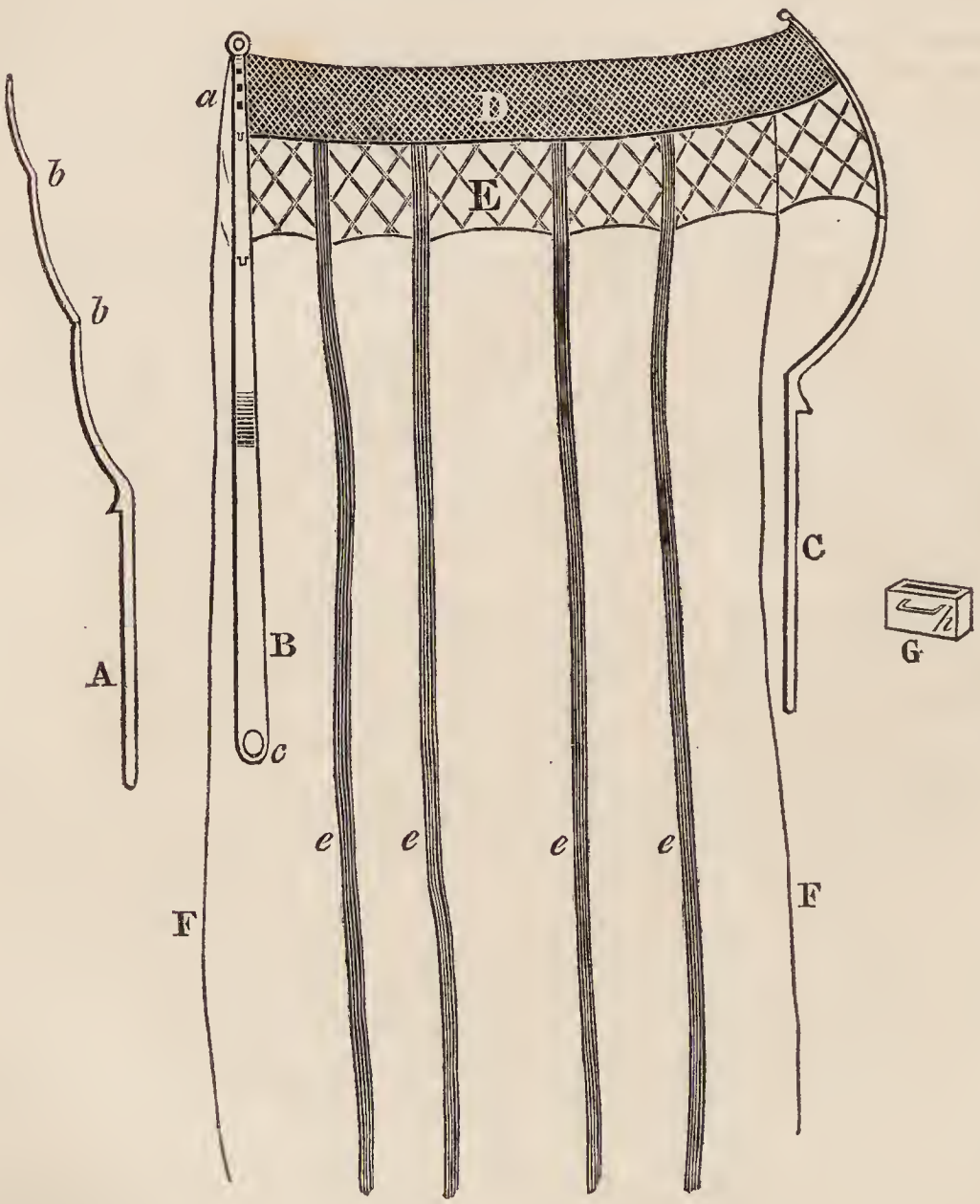
* Provincial Medical and Surgical Journal, April 17, 1850.

handles. These may be tied together at their ends, to form a loop in which the hand may hold when pulling to extract the child.

The thread or fine braid (F F) is to draw the band into the rings at the ends of the fingers, so that it will be carried entirely up during the introduction of the instrument.

To prepare the extractor for application, draw the band through the rings,

Cut No. 1. *showing the Extractor.*

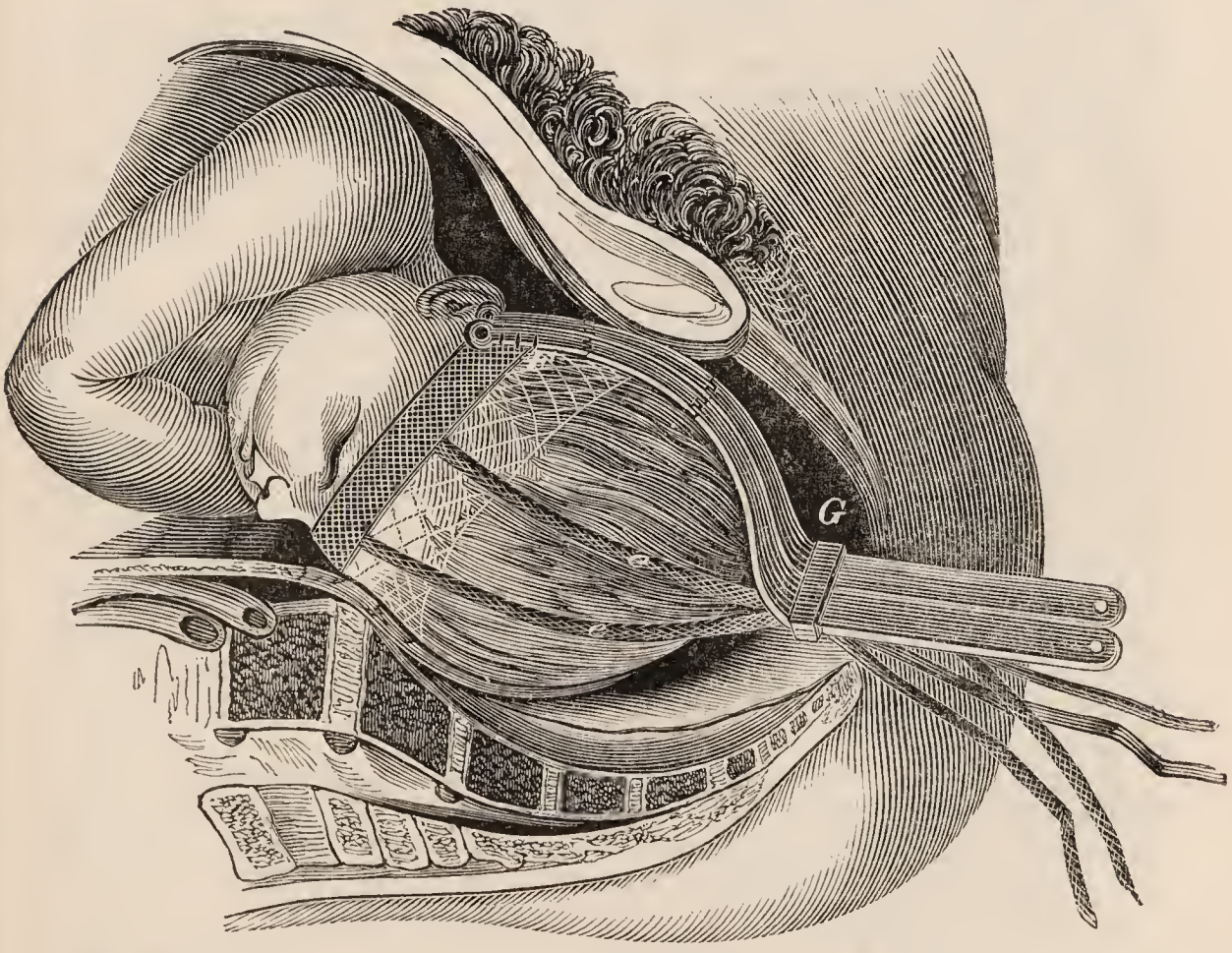


A. The edge of one finger extended as when introduced; *b*, *b*, joints. B. A finger showing the palmar face and the attachment of the band at (*a*) the ring on the end; *c*, a hole in the end of the handle through which strings may be tied. C. The edge of the other finger turned up to show the curve when flexed, with band attached. D. The silk braid or fillet to which are attached straps of silk braid, *e*, *e*, *e*, *e*. E. A net-work, two inches wide, of small silk braid sewed together to form the meshes. F. F. Fine silk braid strings attached to the band half way from the end to the centre and passed through the rings to draw the band into them. G. Sliding ring that slips on the handles to firmly hold them in apposition.

and tie the threads holding it to the ends of the handles; put on the slide, extend the fingers, adjust the straps, and dip the whole in oil.

To introduce it, pass two fingers of the left hand to the presenting part of the head of the child, or to the os uteri; take the instrument as prepared, by the handles, holding the straps in place, parallel with the fingers of the instrument, and pass it within the uterus, with the palmar surface of the fingers next the head. Then, as it is passed up, flexion of the fingers will take place from traction on the straps and the pressure of the uterus, so as to keep them in contact with the head, as if grasping it. With the fingers of the left hand examine and adjust the end of the instrument so as to give it a right direction, then gently press it up until the curve fits upon the head, as seen in cut No. 2. When the end with its bunch of silk passes over the greatest diameter of the child's head, the resistence gives way and it becomes free.

Cut No. 2 showing the Application.



In this process there is no danger of injuring either mother or child, if done with moderate prudence, as the end of the instrument is protected by the bunch of silk band drawn into the rings. Next the threads that hold the band thus, are loosened and the slide taken off. One handle is now grasped and gently carried around the head from its fellow to the opposite side. As the finger goes round it pays out the band at the very place desired. Care must be had that none of the straps are pulled at this stage of the process, lest they draw the band too far down. The other handle is next grasped and carried in the opposite direction until it meets its fellow. During this part of the process two points should be attended to, to facilitate the application. First, to relieve compression between the head and any part of the pelvic

walls, the former may be pressed upward. And when the instrument is passing over the occiput, if passed far up, the end of it may strike against the child's neck and make an obstruction. If this occurs, slightly withdrawing the handle will obviate the difficulty.

When brought together the slide is to be placed upon the handles again and the straps adjusted with the fingers, so as to be about equi-distant from each other, gathered together and passed through the staple upon the sliding ring, and drawn down tightly. Thus applied, the slide on the handles holds the fingers of the instrument parallel to each other, and fixes firmly the ends near together so that the band cannot give or slip off of the head.

The instrument thus applied as seen in cut No. 2, is ready for the application of extractive force, which may be made as occasion requires either directly, obliquely downward, upward or to either side by pulling more forcibly the opposite straps. If the head needs its position altered, it gives us the best possible power for accomplishing it.

The cases to which it is said to be applicable are:

1. All those in which the forceps are now recommended, excepting when the head may be so firmly locked between opposite points of the pelvis that it cannot be moved by compressing it upward.

2. All labours protracted in the second stage, where it is possible to deliver with safety to the child. Being applied with little pain or danger there can be no excuse for allowing a patient to suffer the agonising throes of labour, hour after hour, without progress, as is done in almost all such cases now, should the physician have the extractor at hand.

3. In labours obstructed at the superior strait of the pelvis it will be especially applicable, for the higher up the head is at the time, the easier will be the application of the instrument. This will be manifest if we consider how readily it can be passed up by the side of the head when the fingers are extended, and that the only obstacle likely to interfere with its application is in passing the fingers from one side to the other, of the head. The higher the head is up, the more loosely it floats, and of course, the less resistance of this kind will be offered.

4. Cases requiring speedy delivery at any time, either before labour has commenced (for the os uteri toward the full time is always dilatable enough to allow of its application,) or during its progress, as is sometimes desirable in convulsions, hemorrhage, and the induction of premature labour, to prevent craniotomy.

By applying the extractor, immediately after the separation of the placenta, in placenta previa, as recommended by Prof. Simpson, probably the head may be kept so compressed against the os uteri as to prevent fatal hemorrhage, and possibly, sometimes deliver so speedily as to save the child.

In cases of prolapsus of the funis umbilicalis, the fold may be completely returned by placing it between the ends of the fingers of the extractor, when it will rest upon the bunch of silk band as prepared for introduction, by which it can be carried entirely above the head and held there until the head is delivered.

§ IV.—*Diseases of Children.*

27. *Cranio Malacia, or Soft Occiput.*—Some chemical researches on this rare disease have been undertaken by Professor SCHLOSSBERGER. The author fully agreeing with Rokitansky that, in the investigation of diseases of the bones, the chemist and physician should go hand in hand,—the advantage of which

procedure has been well exhibited in the work of Von Bibra and Geist upon the caries induced by phosphorus,—has to this end availed himself of the clinical observations and preparations of Dr. Elsässer for the full elucidation of the subject he has undertaken to treat.

He prefaces his paper with some observations upon the published analyses of the bones of the child's skull in their normal state. These are few in number, and only for the most part indicate the proportion of organic to inorganic materials, without entering into details. From these and his own analyses, it results that in bones which have been completely dried at a temperature of 120°, and are in a normal condition, the proportion of inorganic materials has been found to range from 61 to 68 per cent. The earthy phosphates have been found varying from 53 to 56 per cent., and only sank below 50 in a bone that was abnormally vascular. In the adult skull, Von Bibra states the proportion does not sink below 56.

As an example of an intermediate state between normal bone and the soft occiput, Professor Schlossberger communicates an account of an examination he made of an occiput he received from Dr. Hauff, which, though belonging to a child fourteen weeks old, admitted of being pressed inwards during life, and cut like a piece of card after death. It furnished 55·252 inorganic to 44·757 organic parts, being exactly the proportions which Rees had observed in a normal temporal bone of a child, but which Berzelius and Von Bibra suspected had not been sufficiently dried. In this same occiput the earthy phosphates constituted 50 per cent.

The analyses of five soft occiputs, taken from Elsässer's preparations, are given. They were well-marked examples, in which great flexibility and yielding were observed, and in some spots the thinning had become so extreme that only the periosteum remained. While some of the preparations exhibited only thinness and softening, in others there were also observed thickened portions of the occiput or adjoining bones, nearly amounting to osteoporosis, with expansion of bone, as indicated by Rokitansky in the extremities of rickety bones. These swollen portions were espccially observed on the frontal and parietal bones, and they continued, after maceration, dark-coloured and excessively porous, the periosteum being detached only with the greatest difficulty. On the inner surface of these spongy portions, osteophytes were developed. The cartilaginous basis of the bones was found to have undergone no chemical alteration. As a general result of the whole examinations, the inorganic material was found, in the thinned parts of the bone, to have sunk to 53 or 51 per cent., and in the thickened spongy parts to 28 per cent., or in slight cases to 40 or 43 per cent. As the affection becomes cured, so does the proportion augment, but never to the extent of exceeding the normal one. The proportion of carbonate of lime to that of earthy phosphates is very fluctuating; and that of the fatty matters is not materially changed.

In considering the nature of the disease, then, we find it differs from *osteo-malacia*, since in that are found a diminished volume of the bones, a percolation of them with fat, and chemical alteration in their cartilaginous basis. Moreover, this is not a disease of childhood, and only in a lesser degree attacks the skull. Between *osteoporosis* and *rachitismus* there is chiefly this difference, that while the one sometimes shows itself as a mere local disease, due to local causes, the other is always due to a general cause, a so-called dyscrasis. In both affections we find porosity, in both a diminished amount of mineral ingredients, with or without accompanying change in the cartilaginous basis. Both Von Bibra and the author have found this last healthy in rickety bones, so that its healthy state in the soft occiput affords no ground for denying this change to be of a rickety nature. The great con-

tradictions which prevail among the different statements that have been made in regard to rachitismus, are due to the complete want of a chemical history of the development of a disease, the anatomical history of the various stages of which has been so well traced out by Guerin.

In respect to the etiology of the affection, Marchand's views and Elsässer's observations are at issue; for while the former prohibits the mother's milk as food, lest the laetic acid might induce a still faster absorption of bone-earth, the latter has especially observed the soft occiput produced in children deprived of a due supply of milk. Chossat observed, in his remarkable experiments on inanition, that when the salts of lime were removed from the food, diarrhœa was very frequently produced (according to Elsässer, this is of frequent occurrence in these children), and that the proportion of salts in the bones diminishing, these became thin and brittle. In his treatise on the soft occiput, Elsässer enters at great length into the diagnosis of this disease in its medical and anatomical aspects. In its chemical aspect the distinction is easy; for in the thinning of the bones of the skull from pressure, from hydrocephalus, tumours, &c., they seldom become softened, or manifest such poverty of bone-salts, in connexion with a healthy condition of their cartilaginous basis.*

28. *Eclampsia Nutans.*—Two cases of this rare form of convulsion, to which Mr. Newnham has lately called attention, appear in the '*Journal für Kinderkrankheiten*,' March 1850, and are translated in the 'London Journal of Medicine.' †

The first case was that of a girl, æt. 3 years, whose brother had died of convulsions; she was healthy at birth, but cut her teeth late, and was weak on the legs. About three months before Dr. Faber saw her she complained frequently of headache, slept a good deal, and lost her appetite. Alteratives were prescribed without benefit. Suddenly she began to squint, and to nod the head, especially to the left side. These bowings at first occurred three times a day, but increased in frequency, until at length they became alarmingly rapid. These attacks merged into epilepsy, and the child appeared to be semi-idiotic.

The second case was a boy, æt. 6 years, of healthy parents. The child was wet-nursed, but throve well, and cut its teeth without trouble. At six years of age he was severely frightened by falling into water, after which he became less lively. He frequently called out in his sleep. One day, being scolded by his father, he began to nod his head violently, the face being, at the same time, slightly distorted. This was at first thought to be a trick; but the bowing returned several times in the day, occurring sometimes as often as eighty times in a minute. The attacks lasted three or four minutes, and the child was evidently fatigued by them. He improved under the use of iron.‡

—Another case of this disease has been made the subject of some interesting observations by Dr. Wilshire. It occurred in an infant six months old. He describes it thus:—"The primary, essential, or pathognomonic sign of the disease in question, is a peculiar 'bowing' forward and downward of the head, sometimes almost to touch the knees: this progressively increases in frequency and severity, until the motion of the head becomes a quick 'nodding,' repeated even as many as one hundred and forty times during the day, as in one of Mr. Newnham's cases, and in his own, fifty times. Sooner or

* Annalen der Chimie; and Brit. and For. Med.-Chir. Rev., Jan. 1850. † June 1850.
‡ London Journal of Medicine, June 1850.

later, this so-called 'Salaam Convulsion' becomes complicated with more general automatic movements, sometimes of the epileptiform, at other times of the tetanoid variety or type. The more severe attacks of the 'bowings' are generally preceded by sleep; and it has been noticed that their severity has been in proportion to the depth and intensity of that sleep. As the disease progresses, paralysis occurs either in the form of paraplegia or hemiplegia, and, finally, complete mental imbecility or idiocy follows, or so severe a shattering of the intellectual element, that it is recovered from but slowly and with great difficulty. The case which had occurred to the author of the paper differed in some important particulars, however, from those related by Mr. Newnham. It agreed in the following points, viz.: in the peculiar movement of the head; in that movement being observed to occur immediately after sleep, and never, it was believed, during the somnolent condition; in that movement becoming allied, during the progress of the malady, with an intercurrent form of general convulsive or automatic action; in the marked effect which appeared to be produced upon the intellectual powers. It differed in the following particulars, viz.: in not being accompanied with paralysis in any form; in not being followed, so far as could be judged, by permanent injury to the intellectual element, or the occurrence of a fatal result; and in being apparently influenced by what seemed to be a right mode of treatment. The therapeutic means chiefly put in force were, the application of blisters behind the ears, keeping the bowels relaxed by castor oil, and the internal administration of the iodide of potassium and the disulphate of quinine. After entering, with some detail, into the pathology of the disease, and its relation to presumable centric and ex-centric causes in respect to the nervous centres and the peripheral nervous system, the author stated, that he considered it probable, that the disease was purely centric in its origin, having its first seat in the sensorium, or in those important parts placed between what are termed, by Mr. Solly, the "hemispheric ganglia" and the top of the spinal chord; and that afterwards the lower, or non-sensorial portion of the spinal apparatus was affected, as proved by the general automatic movements being, in some cases, of a decided tetanoid character. In others, these movements were distinctly epileptiform; and, moreover, hemiplegia had followed; the former circumstance still further indicating, as the seat of mischief, the assemblage of ganglionic centres between the cerebrum and spinal chord; whilst the latter and the supervening affection, or obliteration, of the intellectual powers, appeared to prove the secondary involvement of the great "hemispheric lobes." In one of the cases alluded to by Mr. Newnham, there was reason for believing that the hemispheres, or lateral lobes of the cerebellum, were specially included in the cycle of lesional disturbance. As to what may be the nature of this disturbance, wheresoever it may be primitively situated, and whatsoever it may secondarily draw within its sphere, much doubt must exist, seeing that no post-mortem investigations had hitherto been made. Mr. Newnham inclined to the opinion, that the essential character of the malady was inflammatory action, of a weak and strumous nature, of the membranes investing the medulla oblongata, afterwards extending to other parts. Dr. Wilshire thought that it may be a change in the circulation of the minute vessels, of a scrofulous character.*

29. *Hemorrhage from the Umbilicus.*—Two cases of this accident have occurred to Dr. Bowditch (U. S.), who follows their recital with the subjoined excellent *résumé* of the present state of knowledge on the subject. He states, in the first place, that Dr. West alludes to three cases of fatal icterus in

* London Journal of Medicine, June 1850.

children, published by Dr. A. B. Campbell in the *Northern Journal of Medicine*, for August, 1844. To this paper he has been unable to procure access. He alludes to it now, because Dr. West speaks of fatal hemorrhage from the umbilicus a fortnight after birth as being liable to take place in these cases, and because in one of ours certainly, and in some of Dr. Homans', to which he alludes hereafter, icterus existed. Dr. West remarks that the cases are rare, and that he never met with one. In connexion with these suggestions by Dr. West, the fact of hemorrhage having occurred not unfrequently in cases of disease of liver, in adults in this city, becomes interesting.

Dr. Radford* has a paper on the subject, in which he makes two divisions: namely, 1st, hemorrhage from the chord from bad tying; disease of funis, such as ossification or varicose state of the vessels; 2d, bleeding from the navel, owing to incomplete closure of the vessels. Bleeding in this case, if from the veins, is usually fatal, and the only resource is, cutting down and tying up the vessels, as other treatment fails.

The author has endeavoured to obtain records of twelve cases that have occurred in Boston, seen by Drs. Homans, Jackson, Hayward, and Dyer. Of five, he has gained some imperfect details. Of the others, Dr. Homans, who has collected them, has given me a few items. He gives a brief analysis of their main facts.

Hereditary predisposition.—In only one case is notice taken of any predisposition. This, however, evidently does not give the exact ratio, the records, in this particular, being poor. In one case, the mother was represented as being of a scrofulous disposition.

Period after Birth at which Hemorrhage began.—In the eleven cases in which this was noticed, its average was seven and three-quarter days before hemorrhage began. The earliest day was the third; the latest was the eighteenth.

Period, after falling of the Cords, at which Hemorrhage began.—In three of the cases was this mentioned, and the average time was the eighth day. Latest, eleven days; earliest, five days.

How soon did Death happen after the Commencement of Hemorrhage?—This is named in nine cases. In one, it occurred in "a few hours." Of the eight others, three and seven-ninths of a day was the average; seven days being the highest, and one day the lowest.

Character of the Hemorrhage from Umbilicus.—Mentioned in six cases. In one, it was sudden, and with a sudden return after being stopped, and death took place in a few hours. In all the rest there was more or less effect from the treatment, the blood being checked in its course—usually, however, only for a short time.

Was there any Bleeding from other parts besides the Umbilicus?—A tumour on the scalp appeared in one. In two more, some purpuric eruption; and bloody dejections in six.

Jaundice is a very common accompaniment of this hemorrhage, and is decidedly an unfavorable, though not a fatal, symptom.

Finally.—One died comatose; but the usual termination of life was, apparently, from prostration, induced by the hemorrhage.

From these investigations, and other facts not noticed in this paper, the author infers that there are five classes of hemorrhage from the umbilicus.

1. A bleeding occurs soon after labour. This is generally owing either to insufficient care in applying the ligature to the cord, or to a contraction of

* Edinburgh Medical and Surgical Journal, July 1832, p. 520, vol. xi.—Medical and Surgical Journal, 1832.

the cord, which, at the time of being tied, is large; and the fluids, subsequently exuding, allow a relaxation of the ligature. This, if noticed early, can be easily restrained by a new string.

2. One case is recorded by Dr. Hill,* in which great hemorrhage occurred, in consequence of a practitioner having forcibly removed the cord, from fear that erysipelas would ensue, if it were allowed to remain. It is to be hoped that few cases of this kind will ever occur.

3. There is another, of which we have alluded to one specimen, given in Dr. Jackson's notes of a case treated by Dr. Hayward. The bleeding began on the third day from the removal of the cord, and, notwithstanding every effort, death occurred in twenty-four hours. In this case, there was probably an imperfect closure of the vessels from non-coagulation of the blood.

4. The largest class of serious bleeding is in those in which the funis drops off, and usually nothing abnormal is observed, or, at most, only a delicate sponginess in the umbilicus. After three or four days, an oozing commences, which either increases with every application, or, perhaps, is slightly checked by astringents, &c.; but it almost always proves fatal; and the patients, before death, become perfectly blanched. In these cases, it is very common to observe an alteration in the functions and structure of the liver; the dejections being non-bilious, and, at the post-mortem examinations, disease of the hepatic structure, or of the ducts, being observed.

5. Finally, we have the really hereditary hemorrhagic tendency. The blood, in these cases, oozes from the gums, intestines, under the skin, &c. There are few cases on record of this class in new-born children, unless we consider our own cases and the class of hemorrhage, described as our fourth species, to be such; but there are numerous examples of it among adults, in whom, however, the navel seems to have healed perfectly soon after birth.

Prognosis.—This evidently will vary with the cause of the hemorrhage. For example, an insufficient ligature may be made stronger. A case like that of our second class, viz., an accidental tearing away of the chord, would be much more subject to remedies than either of the last three kinds, namely, an insufficient closure of the vessels; a fungus of the navel, connected, as it usually is, with disease of the liver; and finally, the hemorrhagic diathesis. The first two, under judicious treatment, will undoubtedly do well. In the third, if the vessels can be cut down upon and tied up, some hope may be gained of safety. In fungus and the hemorrhagic diathesis, especially when there is any mark of hepatic disease, much less chance of recovery is afforded.

Treatment.—The treatment, of course, must vary with the class. In relation to the *first class*, viz., that in which there is bleeding from the cord, owing to its contraction and the subsequent loosening of the ligature, it may be remarked that this will rarely happen if the practitioner, at the time of labour, takes sufficient precautions. He should always, before leaving the room, examine the cord a second, and, if need be, a third time; and, if it has been large, and seems disposed to contract, so as to allow of any oozing, a new ligature should be applied.

In the *second class*, where injury is produced by the violent removal of the cord, use should be made of caustic; or, still better, of plaster of Paris poured in a liquid state on the part, so that a plug will be formed, on its becoming hard, in all the minutest crevices, and even in the mouths of the bleeding vessel. This should be retained for three or four days, and success will probably be the result.

* London Medical Gazette, from Dublin Medical Press, vol. lii, p. 556.

In the *third class*, it will be difficult to decide whether the bleeding is owing to the open mouths of deep-seated vessels, or to an original hemorrhagic tendency. If, however, there be no hereditary tendency, and if there be no marks of hepatic lesion, we may use styptics of various kinds: tannin, collodion, sulphate of zinc, sulphate of copper, and caustics. The best treatment, however, would undoubtedly be that advised by Dr. Radford, of Dublin, namely, to cut down and tie up the bleeding mouths. In order to dothis, we should endeavour to decide from which the hemorrhage proceeds, in order to prevent the necessity of too much cutting.

In the *fourth class*, where hemorrhage from the umbilicus, without evident cause, takes place, which can be only partially restrained by astringents, and in which there is hepatic lesion, the author believes that very little hope may be anticipated of affording relief. At times, however, a slight oozing may continue for months, and the patient finally get well. But this is uncommon. In our cases, all astringents and caustic compresses seemed rather to stimulate than diminish the hemorrhage. Even the plaster of Paris, and ligature, and actual cautery, are of no avail. The oozing, checked for awhile, returns until death. Some have advised internal remedies in these cases, with the idea of correcting the fluidity of the blood. For that purpose, the author used sulph. soda, as recommended in the *British and Foreign Medical Review*, ix, 247. If, however, Simon's view is correct, that icteric blood, while it possesses less fibrin, has more salts and albumen, than usual, we should not use sulphate of soda in cases where icterus is found. Transfusion has been suggested; but the older surgeons had no faith in the remedy, and the younger preferred not to use it. To the author it seemed the only means left for preserving life.

In the *fifth class*, where there is a natural predisposition to hemorrhage, what can be done? If the same applications may be made to the child as those made to the adult, the actual cautery is undoubtedly the best styptic.

—An excellent paper on the same subject appeared recently by Dr. Manley, which we reserve for our next volume.

* New York Journal, Jan. 1850.

III.

LECTURES ON THE PROCESSES OF REPAIR AND REPRODUCTION AFTER INJURIES;

Delivered at the Royal College of Surgeons of England,

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LECTURE I.

The phænomena of repair and reproduction are manifestations of the exercise of the same power as that by which the body was developed from the impregnated germ. Probability that the same power operates in the maintenance of the body by nutrition. Characteristics of the power of the impregnated germ. Evidence of the operation of the same germ-power in common nutrition, and in all normal organization: insufficiency of the accepted explanations of maintenance by assimilation and by succession of germs of tissues. Operation of the same power in repair and reproduction. Phænomena of reproduction of parts in the Hydra and other Polypi; in species that can propagate by spontaneous fission and gemmation; in those whose development is with less or more apparent metamorphosis. Imperfection of nearly all reparative processes in the highest Vertebrata. Considerations on the purpose and analogies of the various processes for the recovery of lost perfection.

Mr. President and Gentlemen,—Many considerations led me to choose for the subject of this year's lectures, the processes of repair and reproduction after injuries. The chief of them was in the fact, that the preparations in the pathological museum which illustrate these processes stand next in order after those which suggested the subjects of two former courses. But had I needed another motive for the choice, I might have found one in the advantage which my subject may derive from appearing, in a measure, supplemental to that with which my friend and colleague, Professor Owen, has occupied your attention. The mind, indeed, might gladly rest in the contemplation of such unhindered perfect works of Nature, as those of which he has discoursed; and it may at first seem an ungrateful task to turn from these, and consider the losses of perfection to which such works are liable, especially those losses which, being out of the ordinary course of Nature, abrupt and violent, we might expect would quite spoil the structure and the order of the living body. But, in truth, while studying the means by which living bodies, having suffered injury, regain their perfection, we may find continual manifestations of the same mysterious properties of the germ by which, through development, they first attained it. And in these manifestations we may discern the best evidence that, in developing the body to its perfection, the power of the germ is not lost, or quite exhausted, but rather is diffused through all the parts of the completed being; and that, so diffused, it works in them through all their life, determining, as with continuous design, every natural formative process,

in accordance with the specific character of the individual. For I believe that we cannot form a just conception of the scope and nature of even the least of the processes of repair and reproduction after injury, or of the maintenance of the body in ordinary nutrition, or of its natural changes in the course of age, unless we admit that each organism, in its perfect state, retains, diffused through all its parts, some of the specific properties from which the power issued that actuated the impregnated germ in its development. I will therefore first ask for your attention while I endeavour to explain and establish this doctrine.

It is not a new doctrine, for the celebrated theory of the *nisus formativus*, which Blumenbach maintained, might be expressed in nearly the same terms as I have used; and that which Müller and some others have held of "the organic force," and "the rational creative force," might easily be adapted to them; yet it seems necessary still to argue that such a doctrine should be received as a foundation in physiology. For the general tone of modern physiology is opposed to it, and of late years, especially, the cell-theory of Schleiden and Schwann, and the seeming accuracy which the progress of organic chemistry has given to our notions concerning assimilation, appear to have satisfied most physiologists that we have, in these, sufficiently good hypotheses for the explanation of the maintenance of the perfect organism by nutrition. If it were so, we might need no other hypothesis for the explanation of repair and reproduction; but it will appear, I think, that both in these, and in the processes of common nutrition, a power is in exercise which is not admitted by the cell-theory, or by organic chemistry,—a power continuous with that manifested in the germ, and acting in all essential things like it.

The characteristic property of an impregnated germ is, that when placed in favorable circumstances, all the materials of which it first consists, and all that it appropriates, are developed according to the same method as was observed in the development of its progenitors,—in other words, in conformity with what we may regard as a law of specific character. In all the wonders of development that my colleague has detailed, none, I think, appeared more marvellous than the constancy, the seeming tenacity of purpose, with which the germ is thus developed to the likeness of its parents. However vast its power of multiplication and increase,—however various its metamorphoses,—however far in some of these changes it may deviate from the form in which its parents generated it,—however near in some it may approach the perfect characters of another species,—or, which is stranger still, however much alike all germs may be in their primal structure and earliest developments,—yet, through all these things, each germ moves, with unswerving progress, guided by the same Power as created its first parents, to the formation of a being in which the parental form and properties are reproduced.

Now, the constancy of this result, and its little dependence on external circumstances, justify the expression that every impregnated germ has, in itself, and in the properties with which its Maker has endowed it, the power to develope itself into the perfection of an appropriate specific form. However mysterious the nature of such properties, we cannot deny their existence, or refuse to recognise a law (in the sense in which we generally use that term,) in the regularity with which the power acts that issues from them, when the germ is placed in favorable conditions. And, therefore, if it appear that this power is peculiar in its modes of operation, we may specialize it, whenever acting, as the "power of the germ," or "germ-power," in consideration of its having its apparent origin and intensest action in the germ.

Now, there are certain things observable in the development of a germ, so characteristic of the power exerted in it, that they may be used for determining the differences between this power, and any other supposed to be exerted in

the living body, and therefore as tests for determining whether, in any instance after completed development, the same power is in exercise.

First, then, it may be observed, that as surely as the power of the germ tends always to the attainment of the perfection of the specific form, so is it strictly limited to the attainment and maintenance of that perfection, and to certain rules of time, and space, and mode of progress. The germ rarely falls short of its designed form, but it never goes beyond it,—no creature is known to attain by development a higher specific form than its parents had; and the differences of size, to which by growth the different individuals of a species may attain, are circumscribed in narrow limits. So, too, are the length of life, and, in narrower limits still, the periods and methods of development. Perfection, whether in the whole body, or in any of its parts or tissues, seems to be attainable only by certain methods appropriate to each species; there are certain fixed transitional forms to which the power of the germ, in its development, seems bound.

Wherever, then, in the full life of any creature, we see organic formation ensuing in conformity with these restricted laws, there, we may suppose, a power is in operation like that which actuated the germ.

But, secondly, it seems to be characteristic of the power of the impregnated germ, that it is diffused through many parts, which, whether they be alike or unlike, are all directed to concur, with various time and measure, in the attainment of the design and destiny of the whole.

It is only in few and trivial instances that we can regard the development of one part or system of an embryo as the consequence of the development of another. Rather, the several systems, and the parts of each, are developed independently, though concurrently and commensurately. Thus, the primordial heart and blood-vessels of the embryo appear together, and are developed with corresponding progress; yet are they independent. Thus, too, there is concurrent development of the blood and the system for circulating and purifying it; yet neither development is, in any strict sense, the consequence of the other. Or, again, in smaller instances, there is a concurrent and commensurate development of each of the several parts of a limb, and of all the several limbs of an animal; yet each limb, and each part of each, is developed independently of all the rest. And, in yet more trivial instances, when even so small a thing as the formation of an arch by two outgrowing blood-vessels is to be effected, it is manifest that there must be concurrent development of both, in order that they may exactly meet and coalesce; but it is as manifest that neither of the vessels is so developed in consequence of the development of the other.

Now, when such development of different things in the same body, though mutually independent, are yet commensurate, and concur to the accomplishment of one design, it is surely because they are all dependent on the operation of one and the same power. Such a power or, rather, the properties from which it issues, being thus diffused in the first instance through all the embryo-cells of the germ, would seem to be communicated to all their descendants, and to all the materials that they appropriate; so as to actuate them all, in conformity with the same law of tendency towards the attainment of the perfect specific form.

Now this character of being transmitted and diffused through a succession of heterogeneous forms, and of determining them all, by different means, to concur in the achievement of one design,—this seeming capacity of subordinating a multiplicity of processes to an unity of purpose,—this, again, appears to be so characteristic of the power of the germ, that wherever it is manifested, there we may suspect the same power acts.

But, thirdly, it is observable that the germ is not developed according to any model existing in it either before or after impregnation. Herein, more evidently, though not more truly, than in the former characters, the germ-power differs from that supposed to be exercised in the formation effected by mere assimilation of organic matter, as in the maintenance of the perfect organism by nutrition. In this process, all the material that is added to a part is supposed to be fashioned according to the model, and under the influence, of that in which it is inserted. In the germ, the future being and all its parts may be said to exist in power and tendency, but none is there in model or in rudiment. Even when far developed, and when just about to manifest its highest force, the germ appears scarcely more than a mere mass of similar and indifferent cells. But, presently, its cells concur to develope themselves into the several different members of a body, like that of their parent, when that parent was an embryo; and thenceforward all the cells that descend from these, and all the material that is added to the embryo, are developed into the likeness of the same parent at the successive and corresponding stages of its development. But, in no instance, in all the development of the embryo, is a part formed in precise imitation of one already present,—in no instance is there mere assimilation: the only model after which each germ is developed is that type, according to which, from the first, and by the Divine appointment, all the generations of its ancestors have been constructed.

Such are some of the characters that distinguish the operations of the impregnated germ in its development to the perfect form. These are such as few would endeavour to explain by a cell-theory, or by any doctrine of assimilation; for these, I suppose, all would admit that some peculiar power, issuing from the properties of a germ, is necessary.

But with the acquirement of this perfection, the power of the germ seems to be considered as terminated—at least in the higher animals; and the usual expressions of modern physiology would imply that henceforward, the power which acts in the maintenance and repair of the perfected body is not the same in either kind or measure as that which actuated the development of the germ. But let us now see whether we can be content with the explanation that is commonly given of this maintenance of the body.

The accepted doctrine in physiology seems to be, that each structure in the body has the power of taking from the blood, by a kind of elective affinity, certain appropriate materials, and of so influencing them that they assimilate themselves to it; *i. e.* they adopt or receive its form and properties, and incorporate themselves with it; or else it is held that each cell or structural element of a part, while developing itself into some higher form, leaves behind or produces germs, cytoblasts, or off-shoots, which shall pass through the same development as itself, and in due time succeed to its place and office.

Now, without doubt, the existence of such forces is justly assumed, and we may, by the help of these hypotheses, express correctly a part of the processes by which the maintenance of the body in its perfection is accomplished. The power of living parts to incorporate and assimilate to themselves new materials, seems proved by those instances, among many, in which an alteration being once effected in the properties of a part is maintained through life, although all the particles on which the alteration was originally effected may have passed away and been succeeded by new ones. Thus, *e. g.* the poison of smallpox or of scarlatina, being once added to the blood, presently affects the composition of the whole: the disease pursues its course, and, if recovery ensue, the blood will seem to have returned to its previous condition: yet it is not as it was before; for now the same poison may be added

to it with impunity. In this respect, at least, it has been changed: it is no longer liable to the influence of that which, lately, could disturb the whole order of its life. What the change is that has passed on the blood in these and many similar cases, we know not; but the change, once effected, may be maintained through life. And herein seems to be a proof of the assimilative force in the blood; for there seems no other mode of explaining these cases than by admitting that the altered particles have the power of assimilating to themselves all those by which they are being replaced; in other words, all the blood that is formed after such a disease deviates from the natural composition, so far as to acquire the peculiarity engendered by the disease: it is formed according to the altered model.

Again, as regards the maintenance of the body by the development of the successive germs or cytoblasts of previous structures, or of the offspring of persistent germs or germinal centres,—this may be established (at least as a reasonable hypothesis) by such cases as those of the human teeth and hair, and the like. In these, each productive organ, while developing itself, gives off that which may serve for its reproduction, *i. e.* for the construction of its successor; and, from the analogy of the ordinary development of germs, we may say that in this rudimental structure there is the power necessary for the production of a new organ. We may, indeed, be nearly sure of it; because, if the germ be uprooted, the new organ is not formed.

With such evidence, we may admit the existence of the forces which are assumed in the doctrine of organic assimilation, and of the succession of tissue-germs. Still it is, I think, proveable that such forces are not sufficient for the maintenance of the body in its perfection; and that, even where they do tend towards that end, or are essential to it, they act in subordination to that power which we recognise as determining the impregnated germ in its development, and as diffused through all the structures issuing from the germ.

For, in the first place, it is to be observed, that these usually received explanations of the maintenance of the several parts of the body in nutrition assume the existence, either of some structure to which, as to a model, the new materials may be made like; or else, of something of the nature of a tissue-germ, which may be developed after the model of that from which itself was formed. Both assume a present, or lately present, model. But there are many instances in which new structures are formed for the maintenance of the body, where there is no model according to which the forming matter may shape itself, nor any parent-cell from which a reproducing germ may spring. Such are all the instances of formation for which, in a former course of lectures,* I suggested the term of "nutritive repetition," to distinguish them from the examples of nutritive reproduction such as I have just mentioned. I then referred, for illustration, to the different modes in which sets of teeth may succeed each other. In our own case, as the first or deciduous tooth is being developed, a part of its productive capsule is detached, and serves as a germ for the development of its successor; in which successor the first tooth may be said to be reproduced. But in such jaws as the shark's, and most other fishes, in which we see row after row of teeth succeeding each other, the row behind is not formed of germs derived from the row before, but the front row is repeated in the second, the second in the third, and so on.

This instance of nutritive repetition is one of a large class of similar facts. The new blood-corpuscles, that are being constantly formed for the renovation of the blood, are not developed from germs given off from the old ones;

* Medical Gazette, 1847.

neither are they formed by any assimilative force exercised by the old ones. By watching the stages of their construction, we may really see that the development of each is an independent repetition of the process by which the first was formed. And so with the successive developments of ova and epithelial cells, and many others,—each is developed independent of the rest, and each repeats the changes through which its predecessor passed.

It is useless to multiply instances; else they might be very numerously cited; and, numerous as they are, the theory of nutrition by assimilation, or by the development of successive cytoblasts, is inapplicable to them all,—not merely insufficient, but inapplicable; for a postulate of this theory is the existence of a present model or germ for the construction of the forming part; and in all these cases no such germ or model can be found.

But, on the other hand, when it appears that the development of each new part is a repetition of the development of its predecessors, and even of the first-formed among them, then surely we may admit that they are all, from first to last, formed by the continuous operation of the same power,—the power which begins to work in the impregnated germ, and continues acting for the maintenance or the successive orderly changes of the forms it first constructed.

But I have said that, in instances in which we may discern the operation of an assimilative force, or the existence of cytoblasts or tissue-germs, we must also admit that these are controlled by the same power derived from the embryo-germ. I will adduce but two examples. I have mentioned, as the best instance of an assimilative force, the persistence of alterations once produced by disease in the blood or any tissue; but we know that after a time these alterations are often obliterated, and the blood or tissue returns to its perfect state. By what power?—Not by that of assimilation: that should keep it always the same; we cannot understand assimilation as effecting only a near resemblance; it must produce the very image. By what power, then, is the natural state restored? surely it must be by the same power which determined the whole course of development, from the very germ, which was for a time subjugated by the effects of the disease, but now again brings the diseased part to the same condition as it would have been in, had no morbid change been effected in it.

Again, we speak of the germs of tissues as enough to explain the formation, or reproduction, of the second tooth, and the successive generations of hairs, of muscular fibres, and some other tissues. But, to take the second tooth for an example of this class of cases: it is not like the first, from whose formative organs it derived its germ, but like the corresponding second tooth of the parent. What, then, determined this difference? Not, surely, the independent power of the germ or gemmule derived from the sac of the first tooth, for it is the essential character of germs to imitate precisely in their development those forms from which they sprang.

The teeth herein present an instance of a general rule, that changes supervene as the replacing elements of tissues succeed to one another. In every tissue, for example, the progress of age makes differences. In the continual mutation of particles by which each tissue is maintained in ordinary nutrition, there is a gradual change of form or composition, and the old tissues are manifestly different from the young. Such changes are equally inconsistent with the doctrine of assimilation, and with that of the successive development of tissue-germs; for the powers assumed in these hypotheses could do nothing but produce from first to last the self-same forms.

Thus, then, in nutrition we find many instances in which the doctrines of assimilative force and of tissue-germs are quite inapplicable: in many more,

where such forces as they assume do operate, they yet seem insufficient for the end attained. But the same things which thus prove the insufficiency of these doctrines, are evidences for the truth of that which I have endeavoured to maintain. Especially so are those gradual changes which ensue as life advances; for these, you will observe, answer to all those which were noted as characters of the operation of germ-power. Thus, they are all, in each individual, repetitions of the changes which, in corresponding times, occurred in its progenitors. These changes, as much as any of the stages of earlier development to perfection, occur in conformity with a specific law: they are as much marks of specific character as are any of the earlier transitions, or the perfect features of the individual. In all instances, moreover, the formative processes of the full and later life are limited, as in the germ, to certain periods and methods of development or degeneration; in all, the changes that ensue are concurrent and commensurate in many parts, yet, in each, they are independent of the rest; and they are all effected without any present model.

On the whole, then, since we see that the continual mutation of particles for the growth and maintenance of the living body by nutrition manifests, in all essential things, the peculiar features that characterise the first formation of the same body from the germ, we seem justified in holding that it is one and the same power which, being maintained continuously from the germ to the latest period of normal life, determines all organic formation, Whatever be the properties of the germ from which this formative power emanates, they must, in due measure, be communicated to all the materials which the germ appropriates, and, successively, to all that enter into the construction of the developing body; so that in all its living parts there is a measure of the same power as was most visibly concentrated in the germ. Under this power, the organic assimilative force, in some instances, and the production of successive tissue-germs in others, appear to work as subordinate agents; but in many instances, as in the formation of blood, the power seems to act more directly upon amorphous organic matter, which in the perfect body, as in the germ, it informs according to the law of specific character.

If what has been said appear sufficient to prove the operation of the germ-power in the ordinary maintenance of the body, *i. e.* for the reproduction of particles which are absorbed or cast off at the term of their natural life, then more than sufficient evidence for the same opinion will appear in the phenomena of repair and reproduction after injuries. These, occupying, as it were, a middle place between the phenomena of embryonic development and those of ordinary nutrition, have of late been alternately, or in different instances, referred to one or the other of the different powers by which those phenomena are supposed to be governed. But, probably, the likeness of the phenomena of reproduction to those of both nutrition and embryonic development should have suggested, as they did to Blumenbach and Treviranus,* that all the three are manifestations of one and the same power. That they are so, will be evident, I think, in what I shall have to describe in the following lectures. For, 1st, it will be clear that repair and reproduction cannot be in any case explained as the result of assimilation or by the succession of tissue-germs. In grave injuries and diseases, the parts that might serve as models for the new materials to be assimilated to, or as tissue-germs to develope new structures, are lost or spoiled; and yet the effects of injury and disease are recovered from, and the right specific form and composition are regained. And, secondly, if we watch the manner in which the recovery is achieved, we shall discern in it all those characters which mark the operations of the power of the germ. We shall see that the reproduced parts are formed, not according to any present

* Biologie, iii, 522.

model, but according to the appropriate specific form, and often with a more strikingly evident design towards that form, as an end or purpose, than we can discern in the natural construction of the body. We shall see, too, that in this re-formation there is an independent, though concurrent, development of many parts; and that the whole process is limited by the same restrictions of time, and space, and exact method, as those observed in the original development of the parts. This, also, may be added to the arguments already adduced to prove the continuous action of the germ-power through life, and its slight variation therein; that when, in an adult animal, a part is reproduced after injury or removal, it is made conformable, not to that condition which was proper to it when it was first formed, or in its infantile life, but to that which is proper according to the time of life in which it is reproduced—proper, because like that which the same part had, at the same time of life, in members of former generations. In the reproduction of the foot or the tail of the lizard, they grow, as it were, at once into the full dimensions proper to the part, according to the age of the individual. Spallanzani expressly mentions this:—that when a leg is cut from a full-grown salamander, the new leg and foot are developed, as far as form and structure are concerned, just as those of the larva were; but as to size, they from the beginning grow and are developed to the proper dimensions of the adult. The power, therefore, by which this reproduction is accomplished, would seem to be, not the mere revival of one which, after perfecting the body, had lapsed into a dormant state, but the self-same power which, before the removal of the limb, was occupied in its maintenance by the continual mutation of its particles, and now engages itself, with more energy, in the reconstruction of the whole.

The power to repair the damages sustained by injury, and to reproduce lost parts, appears to belong, in some measure, to all bodies that have definite form and construction. It is not an exclusive property of living beings; for even crystals will repair themselves when, after pieces have been broken from them, they are placed in the same conditions in which they were first formed. I know not what amount of mutual illustration, if any, the repair of crystals and living bodies may afford; but, in any case, we may trace here something like an universal property of bodies that are naturally and orderly constructed: all, in favorable circumstances, can repair at least some of the damages to which they are liable from the violence of external forces.

But, to speak only of the repair and reproduction that occur in the several orders of the animal kingdom: among these they exist in singularly different degrees, and in such as can be only partially included in rules or general expressions. The general statement sometimes made, that the reparative power in each species bears an inverse ratio to its position in the scale of animal life, is certainly not proved; and many instances are contrary to it, such as the great reparative power possessed by the Triton and other lizards, and the apparently complete absence of it in the perfect insects. Rather, the general rule which we may expect to find true, and for which there is already much evidence, may be, that the reparative power bears an inverse proportion to the amount of germ-power consumed in the development and growth of the individual, and in its maintenance in the perfect state.

Our ideas of the consumption of power in the organization of matter, are, perhaps unavoidably, very vague: yet are there facts enough to prove that the power which can issue from the mysterious properties of a germ is limited; that it is not ever communicated to an indefinite quantity of matter; and there are enough to justify the hypothesis, that the germ-power, thus limited, is in some measure consumed in the development of every new structure, and, in a less measure, in the growth and maintenance of those already formed. The

instances to which I shall refer are explicable on this hypothesis, and are, therefore, evidences of its probability.

First, then, it appears constantly true, that the reparative power is greater in all parts of the young than of the older individuals of all species. Even when we compare individuals that have all attained their highest development and growth, this rule seems to be true. We know it from general observations of the results of similar injuries and diseases in persons of different ages: numerous as the exceptions may be, the general rule seems true. And it is yet more evidently proved in the case of some lower animals. Spallanzani mentions it expressly in regard to the reproduction of the tail of the tadpole. the quickness with which the work of reproduction is both begun and perfected, was always, in his experiments, in an inverse ratio to the age of the tadpole. He says the same for the reproduction of the legs of salamanders, and it is only in young frogs and toads that any reproduction of the limbs will take place. So, too, in experiments on the repair of fractures, the union of tendons and the like, in the Mammalia: one may see abundant evidence that the vigour and celerity of the process are in an inverse proportion to the animal's age. There is, indeed, some reason to believe, that in the very early period of embryonic life, a true reproduction of parts of limbs may take place, even in the human species; for, (not to speak of the possibility that supernumerary members may sometimes have been formed in consequence of accidental fission of the budding limbs of the embryo,) there are some cases in which fingers are found on the stumps of arms in such circumstances as justify the belief, that after a limb had been accidentally amputated in the uterus, these had been produced on its remaining portion.

All these facts agree well with the belief that the germ-power is gradually diminished in the acts of organizing matter for the maintenance of the body; and the difference between the reparative power in children and that in adults appears so much greater than the difference in adults of different ages, that it is probable that the germ-power is more diminished by growth than by mere maintenance.

However this may be, it seems certain that the capacity for the repair or reproduction of injured parts is much more diminished by development than by growth or maintenance of the body; *i. e.*, much more by those transformations of parts by which they become fitted for higher offices, than by the multiplication or maintenance of those that are already perfect in their kind and function. In other words, to improve a part requires much more, and more perfect, formative power, than to increase it does.

This, as a general principle, is excmplified in many instances. In the greater part of congenital malformations we find arrest of development, but no hinderance of growth; as a heart in which a septum fails to be developed, yet grows to its full bulk. So, if tadpoles be excluded from due light and heat, their development will be much retarded, but their growth will be less checked. So, too, in the miscalled cultivation and improvement of flowers, growth is increased, but development is hindered; and an excess of coloured leaves is formed, instead of the due number of male and female organs. Or again, in an old ulcer or a sinus, cells may be continually reproduced, maintaining or even increasing the granulations, yet they will not develope themselves into cellular tissue and cuticle for the healing of the part; and so, even when repair and reproduction have gone far towards their ultimate achievement, that which takes a longer time, and oftener fails, is the improvement, the perfecting, of the new material, by its final development. This is observed in all cases of reproduced limbs, and even in ordinary scars.

These facts (and there are many others like them) seem to justify the expression that, not only more favorable conditions, but also a larger amount

of organizing force, is expended in development than in growth. If we may thus interpret the facts, they will be collateral evidence for the belief that, in different species of animals, the reparative power will bear an inverse ratio to the amount of development already passed through; so that, for each species, in its perfect state, the reparative power might be measured by the degree of likeness between the embryonic and the perfect form, structure, and composition. The greater the sum of dissimilarities in all these respects between the embryo and the perfect animal, the less seems to be the reparative power in the latter.

It is consistent with this that the highest amount of reparative power exists in those lowest polypes, in which, as my Colleague has so ably argued, the materials of the germ-mass yet remain, not transformed, but multiplied, and, as it were, grouped into the shape of their bodies. In the fresh-water Hydra, the power of the germ appears communicated without loss to all the cells that descend by multiplication from the original germ-cells; provided only the cells are not developed into higher forms or into subserviency to special functions. In the Hydra viridis, and Hydra fusca, it seems literally true, that any minute cluster of cells, derived by mere multiplication from those of the germ-mass, may, after being separated from the perfect body, reproduce the perfect form. This is the general truth of the numerous experiments performed on Hydræ by Trembley, Roesel, and others. They have been so often quoted, that I need not do more than mention the greatest instances of reproductive power that they showed.

Trembley cut an Hydra into four pieces: each became a perfect Hydra; and while they were growing, he cut each of these four into two or three. These fractions of the quarters being on their way to become perfect, he again divided these, and thus he went on, till from the one Hydra he obtained fifty. All these became perfect; he kept many of them for more than two years, and they multiplied by their natural gemmation just as much as others that had never been divided. So that a division by fifty did not perceptibly diminish the power of the germ present in the polype that was thus subdivided. Again, he cut similar polypes longitudinally, and in an hour or less each half had rolled itself, and seamed up its cut edges, so as to be a perfect Hydra. He split them into four,—he quartered them,—he cut them into as many pieces as he could, and nearly every piece became a perfect Hydra. He slit one into seven pieces, leaving them all connected by the tail, and the Hydra became seven-headed, and he saw all the heads eating at the same time. He cut off the seven heads, and, Hydra-like, they sprang forth again. And even the fabulist dared not invent such a prodigy as the naturalist now saw. The heads of the Lernæan Hydra perished after excision: the heads of this Hydra grew for themselves bodies, and multiplied with as much vigour as their parent-trunk.

Now these instances may suffice to show, that in the lowest polypes the process of reproduction after injury confounds itself with that of their natural generation by gemmation, or, as it probably more rarely happens, by spontaneous fission. We cannot discern a distinction between them; and there are some things which seem to prove the identity of the power which operates in both. Thus, in both alike, the formative power is limited according to the specific characters of the Hydra: immense as the power of increase is, which may be brought into action by the mutilations of the Hydra, yet that power cannot be made to produce an Hydra of much more than ordinary size, or to raise one above its ordinary specific characters. And again, the identity of the power is shown in this,—that the natural act of gemmation retards that of reproduction after injury. Trembley particularly observes, that when an Hydra, from which the head and tentacula had been cut off, gemmated,

the reproduction of the tentacula was retarded soon after the gemmule appeared.

The instance of the Hydra is only one of many proving it to be a general law, that a large power of repair and reproduction after injury exists in the species in which propagation by spontaneous fission, or by gemmation, is possible. I need not say how consistent this is with Professor Owen's doctrine,—that Partheno-genesis, or the capacity of generating without previous impregnation of the parent, is dependent on a retention of a part of the original germ-cells, or of their direct and untransformed descendants, within the body of that parent. Wherever such cells are, there is the power, without the need of impregnation, of producing a new individual; and in all the instances in which such cells form part of the general substance or parenchyma of the body, an injury may be said to act only as a stimulus, exciting the premature exercise of a ready power, which, in the natural case, appears as the generative, but, in the accidental case, appears as the reparative power.

I need not enumerate the species which manifest this coincidence of the power of propagating by gemmation or fission, and of reproducing large portions of the body, and even of reconstructing, from fragments, the whole body. They include, as chief examples, the Actiniæ, which, after bisection, form two perfect individuals; and the Holothuriæ, which, as Sir J. G. Dalyell has observed, when hurt or handled, will eject all their viscera, leaving their body a mere empty sac, and yet in three or four months will have all their viscera regenerated. They include, also, from among the Anellata, the young Nereids, and those species of Nais, on which Bonnet, Spallanzani, and others, made their marvellous experiments,—experiments of which the climax seemed to be achieved when a Nais was cut by M. Lyonnet into thirty or forty separate pieces, and there were produced from those fragments as many perfect individuals.

Instead of dwelling on these instances, let me mention some observations, made by Sir J. G. Dalyell, upon other polypes, which seem calculated to illustrate, in a remarkable manner, the general laws of the reparative processes in even the higher animals.

In the Hydra Tuba—the species of which he has traced that marvellous development into Medusæ—he has found that, when cut in halves, each half may regain the perfect form; but this perfect form is regained only very slowly, and, as it were, by a gradual improvement of parts that are, at first, ill formed. The fact may possibly be explained (as he suggests) by the mutilation having disturbed the progress of the Hydra in its development of young Medusæ; for the experiment was made in March, nearly at the time when the series of changes should have commenced. But, if I may venture not to accept the suggestion of so admirable an observer, I should suspect rather that this is an instance of gradual recovery of perfection, such as we see more generally in the repair of injuries and diseases in the higher animals.

He has noticed something of the same kind, and more definite, in the Tubularia indivisa. A fine specimen was cut near its root, and after the natural fall of its head, the summit of its stem was cloven. An imperfect head was first produced, at right angles to the stem, from one portion of the cleft; after its fall, another and more nearly perfect one was regenerated, and, as it grew, improved yet more. A third appeared, and then a fourth, which was yet more nearly perfect, though the stem was thick, and the tentacula imperfect. The cleft was almost healed, and now a fifth head was formed quite perfect; and after it, as perfectly, a sixth and seventh head. All these were produced in fifteen months.

The lower half of this specimen had been cut off four months after the

separation of the stem. Its upper end bore—first, an abortive head; then, secondly, one which advanced further in development; a third, much better; and then, in succession, other four, which were all well formed.

The upper portion of this lower half of the stem now showing signs of decay, a portion was cut from its lowest part, and further manifested the reproductive power of the stem; for three heads were produced from the upper end of the piece cut off, and four from the lower end of the upper piece which had seemed to be decaying. In 550 days this specimen had grown 22 heads.

Now, I cannot but think that we have, in these instances of gradual recovery from the effects of injury, a type of that gradual return to the perfect form and composition, which are noticed in the higher animals. Our theory of the process of nutrition leads us to believe that, in the constant mutation of particles in nutrition, those elements of the blood, or of any structure that have been altered by disease, in due time degenerate or die, and are cast off or absorbed, and that those which next succeed to them partake, through the assimilative force, of the same morbid character; but that, every time of renewal, the new particles, under the influence of the germ-power, approach a step nearer to the perfect state. Thus, as it were, each generation of new particles is more nearly perfect, till all the effects of the injury or the disease are quite obliterated. Surely, in the gradual recovery of perfection, by these polypes, we have an apt illustration of the theory, one which almost proves its justice.

The power of reconstructing a whole and perfect body, by the development of a fragment, is probably limited to the species that can propagate by spontaneous fission or gemmation, or that increase their size, as some of the Anellata do, by the successive addition of rings, that are developed after the manner of gemmules from those that precede them. Where this power is not possessed, there, whatever be the position of the species in the animal scale, the reparative power appears to be limited to the reproduction of lost members—as legs, claws, a part of the body, the head, an eye, the tail, and the like; yet, within this limit, the rule seems again to hold good, that the amount of reparative power is in an inverse ratio to that of the development, or change of structure and mode of life, through which the animal has passed in its attainment of perfection, or on its way thitherward.

Here, however, even more than in the former cases, we need not perhaps more experiments, but experiments on a larger number of species. It appears generally true, that the species whose development to the perfect state is comparatively simple and direct, have great reparative powers; while many, at least, of those in which the development is with such great changes of form, structure, and mode of life, as may be called metamorphosis, retain in their perfect state scarce any power for the repair of losses. Yet we want more instances of this; and especially it were to be wished that we had the results of experiments upon the lowest animals that pass through such metamorphoses, e. g., on the Hydra Tuba, not only in its hydra state, but in all the changes that succeed, till it attains its complete Medusa form.

In the absence of such evidence as experiments of this kind might furnish, the best examples of this rule are furnished by the experiments of Mr. Newport. They show that, among the insects, the reparative power, in the complete state, is limited to the orders in which that state is attained by a comparatively simple and direct course of development, as the Myriapoda and Phasmidæ, and some of the Orthoptera. These can reproduce their antennæ, and their legs, after removal or mutilation; but their power of reproduction diminishes as their development increases; and, even in the Myriapoda, whose highest development scarcely carries their external form

beyond that of the larvæ of the more perfect insects—even in these, such reparative power apparently ceases when, after the last casting of their integuments, their development is completed.

In the higher hexapod insects, such reproduction has been seen in only the larval state; none of them, in its perfect state, can reproduce an antenna, or any other member. The Myriapoda, then, are, in their reparative power, equal to the larvæ of the higher insects, and nearly all the germ-power which these manifest, appears to be exhausted in the two later metamorphoses.

The case is the stronger, as illustrating the expenditure of germ-power in metamorphoses, when the higher insects are compared with the Arachnida; for in these, which attain their perfect state through more direct development, the reparative power remains equal to the reproduction of limbs and antennæ. A yet stronger contrast is presented between the higher insects and the several species of salamander, in which so profuse a reproduction of the limbs has been observed; for though they be so much higher in the scale of animal life, yet the amount of change in external form and habits of life through which they pass in their development from the embryo to the perfect state appears less than that accomplished in the metamorphoses of insects.

Many instances, besides those which I have cited, appear to support this rule, that the reparative power in each perfect species, whether it be higher or lower in the scale, is in an inverse proportion to the amount of change through which it has passed in its development from the embryonic to the perfect state. And the deduction we may make from them is, that the power for development from the embryo is identical with that exercised for the restoration from injuries; in other words, that the power is the same by which perfection is first achieved, and by which, when lost, it is recovered.

This is, again, generally confirmed in the instances of the Vertebrata; but of the repair in these, or at least in the highest of them, I shall have to speak so exclusively in the future lectures, that I will now only say that, in the highest Vertebrata, and in man, a true reproduction after loss or injury seems limited to three classes of parts:

1. To those which are formed entirely by nutritive repetition, such as the blood and the epithelia.

2. To those which are of lowest organization, and (which seems of more importance) of lowest chemical character, as the gelatinous tissues, the cellular and tendinous, and the bones.

3. To those which are inserted in other tissues, not as essential to their structure, but as accessories, as connecting or incorporating them with the other structures of vegetative or animal life, such as nerve-fibres and blood-vessels,

With these exceptions, injuries or losses in the human body are capable of no more than repair, in its more limited sense; *i. e.*, in the place of what is lost, some lowly-organized tissue is formed, which fills up the breach, and suffices for the maintenance of a less perfect life.

I may thus state the sum of what I have endeavoured to establish. We recognise in the impregnated germ properties which, in favorable conditions, issue in the manifestation of a power capable of developing it into the perfection of a certain specific form and structure; that perfection is maintained through part of the life of the complete being, and is maintained by means, to the explanation of which the accepted doctrines of the assimilative force and of the successive development of tissue-germs are either inapplicable or insufficient. But its maintenance is explicable with the hypothesis that the same power as that which was manifested in the development from the germ is still in action, and actuates, as it did in the germ, all organization in con-

formity with the law of the specific character. So, too, the gradual changes that ensue in the course of life, after the attainment of the most perfect state, may be referred to the continuous operation of the same power, modified in each individual according to the specific type which has been observed in all the members of the same species. And, finally, the same power, working with an apparently increased energy, determines the restoration of lost parts, and the repair of injuries, working, in all cases, towards the restoration of the perfection of the specific form, by the same means, and in the same method, and within the same limits.

There are yet some topics which I will crave your indulgence that I may suggest for your consideration, if only as an apology for a lecture in which I may seem to have been discussing doctrines that can hardly be applicable to our daily practice, and with illustrations drawn from objects in which, as surgeons, we may have but little interest. Let me, then, express my belief that, if ever we are to escape from the obscurities and uncertainties of our art, it must be through the study of those highest laws of our science, which are expressed in the simplest terms in the lives of the lowest orders of creation. It was in the search after the mysteries—that is, after the unknown highest laws—of generation, that the first glance was gained of the largest truth in physiology—the truth of the development of ova through partition and multiplication of the embryo-cells. So may the study of the repair of injuries sustained by the lowest polypes lead us to the clearer knowledge of that law, in reliance upon which alone we dare to practise our profession—the law that lost perfection may be recovered by the operation of the power by which it was once achieved. Already, in the facts that I have quoted from Sir Graham Dalyell, we seem to have the foreshadowing of the facts through which the discovery may be made.

And let us not overlook those admirable provisions which we may find in the lives of all that breathe, against injuries that, but for these provisions, would too often bring them to their end before their appointed time, or leave them mutilated to complete a painful and imperfect life. We are not likely to undervalue, or to lose sight of, the design of all such provisions for our own welfare; but we may better appreciate these if we regard them as only of the same kind as those more abundantly supplied to creatures whom we are apt to think insignificant; indeed, so abundantly that, as if with a consciousness of the facility of repair, self-mutilation is commonly resorted to for the preservation of life. When the Ophiura, or any of the brittle star-fishes, break themselves to fragments, and disappoint the grasp of the anxious naturalist, they probably only repeat what they are instinctively taught to do, that they may elude the jaws of their more ravenous enemies. But death would be better than such mutilation, if their rays could not be reproduced almost as easily as they can be rejected. The experimentalist, too, who cuts off one or the other end of any of the Anellata, perhaps only puts them to a necessity to which they are liable from the attacks of their carnivorous neighbours. Almost defenceless, and so easily mutilated, their condition, were it not for their faculty of reproduction, might be more deplorable than that of any other creature; and even their existence as species might have been endangered long ago. It would almost seem as if the species that have least means of escape or defence from mutilation were those on which the most ample power of repair has been bestowed—an admirable instance, if it be only generally true, of the beneficence that has provided for the welfare of even the least (as we call them) of the living world, with as much care as if they were the sole objects of the Divine regard.

Lastly, if I may venture on so high a theme, let me suggest that the in-

stances of recovery from disease and injury seem to be only examples of a law yet larger than that within the terms of which they may be comprised—a law wider than the grasp of science—the law that expresses our Creator's will for the recovery of all lost perfection. To this train of thought we are guided by the remembrance that the healing of the body was ever chosen as the fittest emblem of His work, whose true mission was to raise man's fallen spirit, and repair the injuries it had sustained; and that once the healing power was exerted in a manner purposely so confined as to advance, like that which we can trace, by progressive stages to the complete cure; for there was one upon whom, when the light of Heaven first fell, so imperfect was his vision, that he saw, confusedly, "men, as trees walking;" and then, by a second touch of the Divine hand, was "restored, and saw every man clearly." Thus guided by the brighter light of revelation, it may be our privilege, while we study the things of which I have been speaking, to gain, by the illustrations of analogy, a clearer insight into the Oneness of the plan by which things spiritual and corporeal are directed. Even now, we may trace some analogy between the acts of the body and those of man's intellectual and moral nature. As in the development of the germ, so in the history of the human spirit, we may discern a striving after perfection—after a perfection, not viewed in any present model (for the human model was marred almost as soon as it was formed), but manifested to the enlightened Reason in the "Express Image" of the "Father of Spirits." And so, whenever, through human frailty, amid the violences of the world, and the remaining "infection of our nature," the spirit loses aught of the perfection to which it was once admitted, still its implanted Power is ever urgent to repair the loss. The same Power, derived and still renewed from the same Parent, working by the same appointed means, and to the same end, restores the fallen spirit to nearly the same perfection that it had before. Then, not unscarred, yet living—"fractus sed invictus"—the Spirit still feels its capacity for a higher life, and presses to its immortal destiny. In that destiny the analogy ends. We may watch the germ-power developing the body into all its marvellous perfection and exact fitness for the purpose of its existence in the world; but, this purpose accomplished, it passes its meridian, and then we trace it through the gradual decay of life and death. But, for the human Spirit that has passed the ordeal of the world, there is no such end. Emerging from its imprisonment in the body, it soars to the element of its higher life; there, in perpetual youth, its powers expand, as the vision of the Infinite unfolds before it; there, in the very presence of its Model, its Parent, and the spring of all its power, it is "like Him, for it sees Him as He is."

LECTURE II.

The materials provided for the repair of injuries in the human body. Division of injuries into open and subcutaneous. Modes of healing of open wounds —by immediate union—by primary adhesion—by granulations—by secondary adhesion—by scabbing. Modes of healing of subcutaneous wounds—by immediate union—by connection, mediate union, or bonds of new substance.

Part taken by extravasated blood in the healing of injuries—its frequent absence—its various disposal when present—its ejection, absorption, or organization. Coagulable lymph the general material for repair by new substance—its chemical and vital properties. Probability of the existence of two varieties of lymph, characterised by their different modes of

development into connective tissue—the one, as formed in open wounds, being developed through nucleated cells; the other, as formed in subcutaneous wounds, through nucleated blastema. Similarity of these modes to the developments of the same tissue in other instances—relations of each of them to the process of inflammation and to suppuration.

In the present lecture, I propose to give a general account of the materials employed for the repair of some of the injuries inflicted on the human body.

I hope I do not err in thinking that the most advantageous mode of treating this subject will be to confine myself to that class of injuries which may be called visible breaches of continuity; such as wounds and fractures. For, in regard to the recovery from diseases, our knowledge of the effects of any disease seems, as yet, too imperfect for us to trace the stages by which the morbid state reverts to that which is healthy. We may be sure it is in conformity with the same general laws as those of recovery from injury, and almost sure that it is by the operation of the remaining germ-power, improving gradually the particles that in succession replace those altered by disease. But the whole details of the process have yet to be discovered.

Even within the narrower field of the repair of breaches of continuity, I must yet assign to myself a closer limit. A future lecture will be devoted to the healing of fractures; in this, therefore, I shall speak almost exclusively of the healing of divided soft parts; and I shall take as the chief and typical examples the repairs of wounds made in operations. References to the healing of other injuries may, however, be made by the way, and for collateral illustration.

Recent improvements in surgery have shown how right Mr. Hunter was, when, in the very beginning of his discussion concerning the healing of injuries, he points out, as a fundamental principle, the difference between those two forms of injuries of which one is subcutaneous, the other open to the air. He says: "The injuries done to sound parts I shall divide into two sorts, according to the effects of the accident. The *first* kind consists of those in which the injured parts do not communicate externally, as concussions of the whole body, or of particular parts, strains, bruises, and simple fractures, which form a large division. The *second* consists of those which have an external communication, comprehending wounds of all kinds, and compound fractures."* And then, he says, "The injuries of the first division, in which the parts do not communicate externally, seldom inflame; while those of the second commonly both inflame and suppurate."

In these sentences Mr. Hunter has embodied the principle on which is founded the whole practice of subcutaneous surgery; a principle of which, indeed, it seems hardly possible to exaggerate the importance. For, of the two injuries inflicted in a wound, the mechanical disturbance of the parts, and the exposure to the air of those that were covered, the exposure, if continued, is the worse. Both are apt to excite inflammation; but the exposure excites it most certainly, and in the worse form; *i. e.* in the form which most delays the process of repair, and which is most apt to endanger life. Abundant instances of this are shown in the difference between a simple and a compound fracture, though the former may have been produced by the greater violence; or, between a single fracture, even with much violence, extending into a joint, and an open wound, never so gently made into one. Or, for parallel instances, one may cite the rarity of suppurations after even extensive ecchymoses, and their general occurrence when wounds are left open.

* Works, vol. iii, p. 240.

I have lately had frequent occasion to observe these differences, in a series of experiments made for the illustration of the healing of divided muscles and tendons. Some of these were divided through open wounds, and some by subcutaneous section; and the present specimens afford a fair example of the difference of results that often ensued. In the same rabbit, the tibialis anticus and extensor longus digitorum were divided on the right side with a section through the skin; on the left, with a subcutaneous section, through a small opening. Twelve days afterwards the rabbit was killed. The wound on the left side is shown well repaired, and with comparatively little trace of inflammation; the gap on the right is closed in with a scab, and an imperfect scar, but under these is a large collection of matter, and no trace of a reparative process. The contrast is the stronger, because in all these cases there is, unavoidably, more mechanical violence inflicted in the gradual subcutaneous division than in the simple open wound. And, it must be added, that a speedy closure of the external wound made in an open section may bring the case into more favorable conditions, than those of a subcutaneous wound made with more violence. This, also, I saw in some of the experiments: a clumsy subcutaneous division of one Achilles-tendon excited great inflammation about it; while the open section of the other tendon in the same rabbit was quickly and well repaired, because the external wound had been speedily united, and had sufficiently soon converted the open into a subcutaneous injury.

Still, what Mr. Hunter said is true; subcutaneous wounds seldom inflame; open wounds generally both inflame and suppurate. It will be a principal object of this lecture to show something like an anatomical reason for this difference, in the fact that the materials produced for the repair of open wounds are not the same, or, at least, do not develope themselves in the same manner, as those for the repair of closed or subcutaneous ones.

Before speaking of the materials for repair, I must briefly state that the healing of open wounds may be accomplished by five different modes—namely, 1. By immediate union; 2. By primary adhesion; 3. By granulations; 4. By secondary adhesions, or the union of granulations; 5. By healing under a scab. The repair of subcutaneous wounds may be effected by immediate union, but is generally accomplished by connection, or the formation of bonds of union between the divided and retracted parts. Very rarely it is effected by means of granulations without suppuration.

Of these modes, which I hope to describe hereafter in detail, it is the peculiarity of the first, or process of immediate union, that it is accomplished by the mere reunion or rejoining of the divided parts, without the production or interposition of any new material. In all the others, new material is produced and organized. This process of immediate union corresponds with what Mr. Hunter called "union by the first intention." It is not the same as that which, in modern surgery, is called union by the first intention; for that is the same as Mr. Hunter named "union by adhesion," or, "by the adhesive inflammation," and is effected, as he described it, by the organization of lymph interposed between two closely approximated wounded surfaces. Mr. Hunter maintained that union by the first intention is effected by means of the fibrine of the blood extravasated between the surfaces of the injured part, which fibrine, there coagulating, adheres to both the surfaces, becomes organized, and forms a vascular bond of union between them.* Doubtless, Mr. Hunter was, in this, in error; but, as the blood extravasated in wounds is not without influence on their repair, I will endeavour to state the several modes in which it may, when thus effused, be finally disposed of.

* Works, vol. iii, 253.

In my last course of lectures, I stated the evidences for believing that masses of effused, or stagnant and coagulated, blood may be organized; *i. e.* may assume the characters of a tissue, and may coalesce with the adjacent parts and become vascular. Among these evidences, several cases were mentioned in which such organization of blood had been distinctly traced; they included cases of blood effused in serous sacs, especially in the arachnoid clots in veins organizing into fibrous cords, or, after less organization, degenerating into phlebolithes, clots organizing into tumours in the heart and arteries, and the clots so organized above ligatures on arteries as to form part of the fibrous cord, by which the obliterated artery is replaced. These last cases afforded the most conclusive evidence, because they had been very carefully investigated in a series of experiments and microscopic observations, by Dr. Zwicky.* In the course of last year I had the opportunity of examining a specimen which, more fully than any other I had seen, confirmed his account of the mode in which blood clots became organized. It supplied, too, some facts which appear to me important to the present subject.

The specimen was obtained from an insane person, by my friend Mr. Holmes Coote. A thin layer of pale blood-coloured and ruddy membrane lined the whole internal surface of the cerebral dura mater, and adhered close to it. Its colour, the existence of patches of blood-clot imbedded in it, and all its other characters, satisfactorily proved that it had been a thin clot of blood,—an example of such as are effused in apoplexy of the cerebral membranes, of such as Mr. Prescott Hewett has so fully described in his paper in the 'Medico-Chirurgical Transactions.' Numerous small vessels could be seen passing from the dura-mater into this clot-membrane; and with the microscope, while they were still full of blood, I made a sketch from which the diagram was copied. The arrangement of blood-vessels bears a close resemblance, but, perhaps, more in its irregularity than in any positive characters or plan, to that which exists in false membrane formed of organized lymph: but the vessels were, I think, generally larger.

Such were the blood-vessels of this organized clot. Its minute structure showed characters which are of peculiar interest, because of their resemblance to those observed in the material that is commonly formed in the repair of subcutaneous injuries. In the substance of what else appeared like a filamentous clot of fibrine, sprinkled over with minute molecules, the addition of acetic acid brought into view corpuscles like nuclei, or cytoblasts, very elongated, attenuated, and, in some instances, like short strips of flat fibre. Of course, such corpuscles are not to be found in any ordinary clot of fibrine; neither are they seen in any stage of the organization of such lymph as is commonly effused in inflammation; but they exactly resemble such as may be found in certain examples of rudimental cellular tissue, and (among these) in the material for the repair of subcutaneous injuries. In short, the minute structure of this clot now organized was an example of what I shall have often to refer to under the name of "nucleated blastema."

With such evidence as this of the organization of a thin layer of blood-clot, and of its development of its fibrine being apparently identical with that of the material commonly formed for the repair of subcutaneous injuries, it was with much surprise that I found that extravasated blood can, commonly, have no share at all in the repair of injuries.

One of the best proofs of this is, that scarcely the smallest portion of blood is effused in the cases in which the largest quantity of reparative material is produced in the shortest time, and in which the healing process is most perfectly accomplished. In twenty cases in which I have lately divided the

* Ueber die Thrombus; Zurich, 1846.

Achilles tendon in rabbits, I have only once found, in the subsequent examinations, a clot of extravasated blood in the track of the wound. In this case, I believe, the posterior tibial artery was wounded: for in all others, and in similar divisions of muscles, unless a large arterial trunk, such as the anterior tibial, were cut, the only effusion of blood was in little blotches, not in separate clots, but effused or infiltrated in the cellular tissue near the wound. In some cases there was blood-stained infiltration of the inflammatory products, but in none were there such clots as could be organized into bonds of union. In short, parts thus divided scarcely bleed: what blood does flow escapes easily through the outer wound, as the surrounding tissues collapse into the space left by the retracting parts; or, what remains is infiltrated into the tissues, and forms no separate clot.

It is the same with fractures. In a large proportion of these, one finds no clots lying between the fragments where they are to be united, and only very small spottings of blood, like ecchymoses, in or beneath the periosteum. The abundant extravasations that commonly exist in the subcutaneous tissue are generally confined to it: they are not continued down to the periosteum or bone.

In all these cases, then, we have sufficient proof that extravasated blood is not necessary for union by the first intention, or for any other mode of repair, in the simple fact that where the repair is best, and the material for it most ample, no blood is so extravasated as to form a clot that could be organized.

But, though this may be the usual case, the question still remains—When blood is effused between wounded surfaces, and clots there, how are the clots disposed of? For often, though not generally, such clots are found in wounds, or between the ends of a broken bone, or a divided tendon when an artery by its side is cut; and in most operation-wounds, one sees blood left on them, or flowing on their surfaces, after they are done up. How, then, is this blood disposed of?

If effused in large quantity, so as to form a voluminous clot, and especially if so effused in a wound which is not perfectly excluded from the air, or if effused in even a subcutaneous injury in a person whose health is not good, it is most likely to excite inflammation; and the swelling of the wounded parts, or their commencing suppuration, will push it out of the wound. Thus we often see blood ejected.

But in more favorable circumstances it may be absorbed; and this may happen whether it have formed separate clots, or, more readily, when it is infiltrated in the tissues. What I have seen, however, in the experiments to which I have already referred, leads me to dissent from the account commonly given of the absorption of blood thus effused. The expressions generally used imply that the first thing towards the repair of such a wound is the absorption of the extravasated blood; and that then, in its place, the lymph or reparative material is effused. But this can hardly be the case; for the absorption of blood is a very slow process, and commonly requires as much time as would suffice for the complete healing of a wound, or even of a fracture. Not to mention the very slow absorption of the extravasations of blood in apoplexy, or in serous sacs, I have found the blood effused in the subcutaneous tissue and the muscles scarcely changed at the end of five weeks after a simple fracture; that in a tied artery as little changed after seven weeks; and even in common leech-bites we may sometimes find the blood-corpuscles in little ecchymoses unchanged a month after their extravasation: yet in much less time than this it is commonly implied that all the blood extravasated in an injury is cleared quite away, that lymph may occupy its place. My impression is that this opinion rests on imperfect observations. Blood is

supposed to be effused in all subcutaneous injuries; and where it is not found, it is supposed to have been absorbed; the truth, rather, being that where no blood appears, none ever was.

The true method of the absorption of blood seems to be, that it is enclosed within the effused reparative material, and absorbed by the vessels of that material as its organization proceeds. The best instance in support of this that I have seen was in the case of an Achilles tendon divided subcutaneously six days before death. The reparative process had proceeded favorable, and as strong a band of union as is usual at that period was formed of the new reparative material effused between the retracted ends. On slitting open this band, I found within it a clot of blood, such as must have come from a large vessel; and this clot was completely enclosed within the new material, not closely adherent to it, nor changed as if towards organization, but rather decolorized, mottled, and so altered as clots are in apoplexy before absorption.

I believe that this case only showed in a very marked manner what usually happens with blood thus effused and not ejected; for it is quite common, after the division of tendons, to find new reparative material, if not containing distinct clots, yet blotched with the blood that was infiltrated in the tissue in which the reparative material is deposited: and even when the repair of a fracture was nearly perfect, I have still found traces of blood-corpuscles enclosed in the reparative material, and degenerating, as if in preparation for absorption.

Ejection and absorption are, doubtless, the usual means by which blood effused in injuries is disposed of; yet I feel nearly sure it may in some instances become organized and form part of the reparative material. The cases of manifest organization of blood already referred to leave no doubt of the possibility of this happening: its occurrence can no longer be set aside as a thing quite improbable. The only question is, whether the organization of blood effused in injuries has been seen. Now I think no one familiar with Hunter's works will lightly esteem any statement of his as to a matter of observation. He may have been sometimes deceived in thinking that he saw blood becoming organized in subcutaneous injuries (for subcutaneous granulations are sometimes very like partially decolorized clots); yet I believe he was more often right: for sometimes one finds clots of blood about the fractured ends of bones which have every appearance of being in process of organization. They do not look mottled, or rusty, or brownish, as extravasated blood does when it is degenerating, preparatory to its absorption; but they are uniformly decolorized to a pinkish yellow hue. They have less appearance of filamentous structure that recent clots have, and they are not grumous or friable, like old and degenerating ones, but have a peculiar toughness, compactness, and elasticity, like firm gelatine. When clots are found in this condition, I believe it is a sign that they were organizing, for this is the condition into which, commonly, the clot in a tied artery passes in its way to be fully organized; and (which is very characteristic) you may find clots in the track of wounded parts thus changing, as if towards organization, while those about them, and out of the way of the reparative process, are degenerating.

On the whole, then, I believe we may thus conclude concerning the part that blood, when it is extravasated, takes in the repair of injuries:—

1. It is neither necessary nor advantageous to any mode of healing.
2. A large clot, at all exposed to the air, irritates and is ejected.
3. In more favorable conditions the effused blood becomes enclosed in the accumulating reparative material; and while this is organizing, the blood is absorbed; and—

Lastly, it is probable that the blood may be organized and form part of the

reparative material; but even in this case it probably retards the healing of the injury.

I proceed now to the consideration of the material which is produced for the repair of injuries that are not healed by the immediate union. It is that to which the general name of lymph, or coagulable lymph, is given.

Our notions concerning the properties of this substance, when once effused for the repair of injuries, are derived almost entirely from examinations of the lymph effused in acute inflammations, with which it is supposed to be identical. The identity is far from being proved, but their similarity is in many particulars evident, and especially in that both manifest, by their spontaneous coagulation, that they contain fibrine. The coagulum which is spontaneously formed in the reparative material is, in microscopic characters, identical with that of fibrine: chemically, too, they appear the same; and the organization of the fibrine of the blood in the complete clot, as well as all the other circumstances which lead to the opinion that fibrine is the principal material for organization into tissues,* justifies the belief that the lymph effused for purposes of repair has fibrine for its principal constituent. However, when we speak of fibrine as the chief reparative material, we must not have in mind the pure organic compound that minute chemistry might obtain, but rather that which exists in the natural, and seemingly rough, state,—as fibrine, with some fatty matter, and some incidental saline constituents; for all these are found in all the specimens of coagulable lymph that have been examined; and doubtless they are essential, as the so-called "incidental" principles always are, to the due construction of the substance to be organized.

Regarding its vital properties, the essential character of the coagulable lymph is its tendency to develop itself,—a tendency which it has of its own properties. It thus displays itself as a plasma or blastema—a fluid to be classed with those others that manifest the capacity to assume organic structure,—such as the lymph and chyle that develop themselves to blood; the semen, which, at first fluid, gradually develops itself into more and more complex structures.

The natural tendency of coagulable lymph is to develope itself into the fibrous, or the common fibro-cellular or connective tissue—the lowest form of vascular tissue, and the structure which, in nearly all cases in man, constitutes the bond by which disunited parts are again joined. This is commonly formed, whatever be the tissue upon which the lymph is placed, whether containing cellular tissue in its natural structure or not. This, therefore, we may regard as the common or general tendency of lymph; but in certain cases the development of lymph passes beyond this form, or deviates from it into another direction, in adaptation to the special necessity of the part to be repaired. Thus, for the repair of bone, the lymph may proceed a certain distance towards the development of fibrous tissue, as if for a common healing; but this fibrous tissue may next ossify; or, not forming fibrous tissue at all, the lymph may proceed at once to the formation of a nearly perfect cartilage, and this may ossify. In general, moreover, the character of the connective tissue that is formed in repair is adapted to that of the parts that it unites. The bond for the union of a tendon is much tougher than that for a common scar in the skin; that in skin is tougher and less pliant than that in mucous membrane, and so on.

It has been thought a nice question, whether these variations in the developments of the same material—*i. e.* of the lymph—in adaptation to the purposes it has in each case to serve, be due to the assimilating influence of the parts among which it is deposited, or to a specific power, like the germ-

* See especially Carpenter's Physiology, p. 81, &c.

power, which determines in each case the special result, as in embryonic development it determines the formation of the several dissimilar organs out of similar materials. I have little doubt it is such a germ-power. In favour of this view, are all those general facts concerning the continuousness of its operation from the germ onwards, which I mentioned in my last lecture; and we may commonly observe that the development of special structures in the reparative material takes place at considerable distances from the structures by whose assimilative force some have supposed the development to be determined. Thus, *e. g.* in the repair of fractures, one may find, sometimes, plates of bone formed in the new fibrous material external to the periosteum of the old bone; and in the formation of the tough fibrous tissue which is made for the repair of tendons, one may always notice that the development is equal and commensurate through the whole length of the new bond of union. Such a development cannot be determined by the contact, or even by the contiguity, of the original tendinous structure, or by anything like an assimilative force issuing from it.

But, passing by for the present the instances of special development of the reparative material, in adaptation to special purposes or injuries, let me speak of its development into fibrous, fibro-cellular, or connective tissue. I have said that, in its first production, the reparative material is like the lymph of inflamed serous membranes,—at least, no characteristic difference between them is yet known; neither are there yet any observations to show a difference in the characters of the materials effused for the repair of injuries of different parts, or in different circumstances; and yet such a difference, in even the original characters of the lymph, is indicated by the fact that in different circumstances it may proceed to the same end—the formation of fibrous tissue—by two different ways of development. The lymph, or new material, which is produced for the repair of open wounds, generally developes itself into fibro-cellular tissue through nucleated cells; that formed for the healing of subcutaneous wounds as generally developes intself into the same tissue through the medium of nucleated blastema.

Now both these are repetitions of natural modes of development of the same forms of tissue. In the embryo and fœtus you may trace very well the development of subcutaneous cellular tissue through nucleated cells, and that of tendons and other *formed* fibro-cellular or fibrous tissues through nucleated blastema.

It must not appear an objection that there should be two modes of development to the same perfect tissue; for this is usual, and has been observed in nearly all the tissues. I spoke of it last year in relation to the development of the blood-corpuscles, of which a first set are formed from part of the embryo-cells that form the germinal area, or the whole body of the embryo, and the second set are formed exclusively from the corpuscles of lymph and chyle; and so it is with the cartilage, the muscular, and other tissues that are formed in the earliest periods of embryo-life. At first they are developed from some of the embryo-cells; yet in later life no such cells are seen among them, but others appropriate to them, but of widely different form. So also in the bones, which at first are developed through cartilage, but in their subsequent growth are increased by ossification of fibrous tissue, and in the repair of which we shall find even more numerous modifications of these different developments.

The development of the fibro-cellular or connective substance through nucleated cells may be observed in the material of granulations, or in that of inflammatory adhesions, whether in a serous sac or in a wound healing by primary adhesion, in inflammatory indurations, and in the naturally developed

fibro-cellular tissue of at least many parts. The process is, with slight and apparently not essential modifications, the same in all, and is, I believe, almost exactly as described by Schwann.

The cells first formed are round, very slightly granular, from 1-1500th to 1-2500th of an inch in diameter; and (if not at once, yet as soon as water is added) they display a well-marked cell-wall, and a clearly defined round nucleus. Whether in granulations, or in inflammatory exudations, such cells present a striking resemblance to the white corpuscles, or lymph-corpuscles, in the blood. Indeed, the only usual difference between them is in the character of the nucleus, which, in these new-formed cells presents a well-defined dark-edged wall, and clear contents; but, in the white blood-corpuscles, appears rather as a mass of colourless, but nebulous substance, with no decided distinction of wall and contents. Such a difference may be connected with the different destinations of the nuclei; in the cells of which fibro-cellular tissue is to be formed, they take a principal share in the development; but, in the lymph-corpuscles developing into mammalian blood-corpuscles, the mass of the nucleus is diffused into the cell-contents, and becomes uniform with them.

In the development of cellular tissue from these cells, whether in the natural structures or in those that are formed in disease or after injury, the first apparent change is in the nucleus. It becomes oval (even before the cell does), and at the same time becomes clearer, brighter, like a vesicle tensely filled with pellucid substance. One or two nucleoli now appear distinctly in it, and soon it attenuates itself; but this it does later, or in a less degree, than the cell: for a common appearance is that of elongated cells bellied out at their middle by the nucleus.

While these changes are ensuing in the nucleus, each cell also is developing its structure; first becoming more minutely, yet more distinctly, granular or dotted, then having its cell-wall thinned, or even losing it. It elongates at one or both ends, and thus are produced a variety of lanceolate, caudate, or spindle-shaped cells, which gradually elongate and attenuate themselves towards the filamentous form. As they thus change, they also group themselves, so that, commonly, one may find the swollen part of each, at which the nucleus lies, engaged between the thinner parts of the two or more adjacent to it. Thus, the filaments into which the cells are developed are clustered or fasciculated; each cell forming, I think, usually, only one filament,* and long filaments being sometimes formed by the attachment of the ends of two or more, each developed from a single cell.

The final disposal of the nuclei of these cells is hard to discern. Doubtless in many instances they are developed into filaments, like those of elastic tissue, such as Henle has well named nucleus-fibres. But in the development of the cellular tissue formed in inflammation or granulating wounds, the nuclei seem rather to waste, and be absorbed. Certainly such nucleus-fibres are not found in scars lately formed, though common in those of old standing. But although the nuclei may thus be formed for only a brief existence, yet in their time they display more organic activity than the cells; for they take the initiative, not only in the development of the filament, but also in the multiplication of the cells. In granulations, one may often find large compound cells, of oval form, and as much as 1-250th of an inch in diameter, containing eight, ten, or more nuclei. These have been derived by subdivision from the nucleus of the simple cell, and are probably destined to

* Schwann describes each elongated cell as splitting up into several filaments. I have not seen clear indications of such a process: but it may occur in some parts in which I have not examined the development.

be the nuclei of as many separate cells; affording an instance of conformity with that same law of multiplication of cells by partition of the nucleus, which is traced as the constant method for the construction of the germ-mass in the ovum.

Such, briefly, is the process for the development of fibro-cellular tissue through nucleated cells. Some modifications of it may be observed in certain cases, especially in regard to the proportion that the cells bear to the substance in which they lie. In some forms of granulations, and in some natural parts of the embryo, this substance is abundant; and I think it may be developed so as to take part in the formation of filaments. But none of the modifications affect the essential characters of the process.

The development of fibro-cellular or fibrous tissue through nucleated blastema is observed in the natural development of tendons and ligaments, and, as I have already said, in the organization of the material by which, in most cases, the bonds of connection after subcutaneous wounds are formed. It is the same which Henle* regards as the only mode of development of the fibro-cellular and fibrous tissues. Schwann, on the other hand, believes that there is no other mode than that which I have just described. My account will not appear less probable, while it shows that both these admirable anatomists are right in what they severally affirm, though, it may be, not in what they doubt or deny. Certain it is that both these modes of development of fibro-cellular or fibrous tissue may be traced; nor can any better example be selected than in the formation of scars from granulations, and of the bonds that unite subcutaneously divided tendons.

Of the union of divided tendons I hope to speak in a future lecture. For the present purpose, and in relation to the development of fibro-cellular or fibrous tissue from nucleated blastema, it may be enough to state, that when the first effusion of the products of the inflammation, excited by the violence of the wound, is completed, then a quantity of finely molecular or dimly-shaded substance, like homogeneous or dotted fibrine, begins to appear in the space in which the bond of union is to be formed. This substance is infiltrated in the tissue that collapses into the space between the retracted ends of the tendon. At first there is no appearance of nuclei or cytoblasts in it; it seems to be merely a blastema of fibrine, but as it acquires firmness and distinctness, the nuclei appear in it; they seem to form out of collecting clusters of granules, and presently appear as oval bodies, with dark hard outlines, soon becoming elongated, with clear contents, without nuclei, irregularly scattered, but so firmly imbedded in the blastema, that, in general, they cannot be dislodged. They may be seen in very fine fragments without reagents; but, commonly, the application of acetic acid is necessary to make them distinct, by making the intermediate substance transparent, while the nuclei themselves acquire dark edges, and shrivel up a little. The nuclei undergo little change, while the blastema in which they are imbedded is acquiring, more and more distinctly, the filamentous appearance, and then the filamentous structure, only they appear to elongate and to attenuate themselves, and to grow more irregular in their outlines, as if by shrivelling.

The blastema may become at length perfect fibro-cellular or fibrous tissue—tissue not to be distinguished from that found in normal conditions. The final disposal of the nuclei is doubtless sometimes, as Henle describes it, that they are developed into the nucleus-fibres, and constitute some of the various forms in which elastic yellow tissue is found mingled with the proper white

* Allgemeine Anatomie. A similar process is described by Reichert, Zwicky, and Gerlach.

filaments. But, in the process of repair by tissue thus developed, as well as by that which is formed through cells, my impression is that the nuclei finally shrivel—gradually contracting into little crooked or branched lines, and at length disappearing; for, as I have already said, well-formed nucleus fibres, or such elastic yellow fibres as might be developed from them, do not generally occur in cicatrices of recent formation, or in the large bonds of union by which divided tendons are healed.

I have been thus minute in the account of these two modes of development of fibro-cellular tissue, prevailing alike in the natural structures and in the materials of repair, because the knowledge of them may enable us to settle some questions respecting all the modes of healing, and because it seems to point out the essential anatomical difference in the healing of open and subcutaneous wounds, with disconnection of divided parts.

The general truth appears to be (as already stated), that the material of repair for subcutaneous wounds is developed into cellular tissue through the formation of nucleated blastema, while that for repair by primary adhesions, and by granulation, is developed into the same through nucleated cells. Now, since both these methods of development are, as I have already said, imitations of natural methods, we might suppose that they are therefore both alike natural or healthy processes—both alike independent of inflammation—alike sure to pass to their purposed end, safe from disease or degeneration.

But, if we consider also the morbid conditions in which these two methods of development of cellular or fibrous tissue occur, then we can see that the development through cells is characteristic of inflammatory processes, at least as far as the origin of the cells is concerned; for, of such cells, in various stages of development, are formed not only long-suppurating granulations, but also the walls of abscesses, inflammatory infiltrations, producing succulence, indurations, and thickenings of soft parts; the lymph produced in inflammation of serous membranes, which organizes itself into false membranes.

On the other hand, the development of cellular tissue through nucleated blastema, is, in morbid processes, observed in instances in which there are commonly no signs of inflammation, as e. g. in warts and condylomata, in the simple fibro-cellular tumours of the subcutaneous tissue, in nasal polypi, in organizing clots of blood.

These instances, then, may enable us to conclude respecting the existence or non-existence of inflammation in the healing of injuries. The material of repair in union by primary adhesion and granulations is the same, in appearance and mode of development, as we find produced in other conditions, which all are agreed to call inflammatory; but, in the healing of subcutaneous wounds, we find a different material of repair, which resembles, in both appearance and mode of development, that which we find forming growths, whose production is not attended with any signs of inflammation. On these grounds, therefore—and they are corroborated by the appearances of the injured parts during the process of healing—we are justified in holding, generally, that inflammation ensues in the healing by adhesion and by granulations, but does not exist in the healing of subcutaneous wounds.

I shall again have occasion to consider the relation between the healing processes and that of inflammation. I will now only briefly say, that although inflammation may be deemed necessary for the production of the lymph that may form adhesions or granulations, yet we have no evidence that the continuance of inflammation is necessary for the organization of the lymph; rather, the persistence of inflammation seems to hinder the organization of the lymph, to keep it in a low state of development, or to favour its de-

generation. Thus, to name but one example, granulations over an irritating body suppurate abundantly, and remain for years unhealed; that is, they are imperfectly organized; they stop short of their development into the cellular tissue and cuticle proper to cicatrices, or degenerate into pus.

I may also add, that although I have described the two modes of development of fibro-cellular or fibrous tissue for the healing of wounds as if they were always as separate as they are distinct, yet they may coexist, and probably often do so. In the repair of many wounds, the two materials, namely, that which is to be developed through nucleated cells, and that whose progress is to be through nucleated blastema, may be mixed. Thus, in subcutaneous wounds and injuries—as, for example, in the case of divided tendons—the first consequence of the mechanical violence is the effusion of a common inflammatory product, which makes the cellular tissue œdematous, and organizes itself into nucleated cells. Thus you find the space between the retracted parts for about two days; but, then, the more proper and purer material of repair is produced, and this, increasing in an inverse proportion to the degree of inflammation, soon overwhelms the former product of inflammation, and is developed into the nucleated blastema. Still, for many days, traces of the inflammatory product may be discerned mingled with the blastema, confusing its appearance, but, I believe, finally organizing with it into the bond of union. So, in divided muscles, and in simple fractures, the inflammatory exudation, produced in consequence of the first violence, appears to mingle and develope itself with the more proper material of repair; but they bear an inverse proportion to one another, and the more manifest the signs of inflammation, the less is the quantity of the proper reparative material, and the slower, in the end, the process of repair.

On the other hand, I think that in the ordinary healing of open wounds, which are soon brought together by sutures, or other appropriate means, there may be less than the commonly observed formation of nucleated cells, and some of the reparative material may be developed through the nucleated blastema. Or, when the different materials are not mingled at the same spot, yet, in one wound, different parts may be healed by the organization of one or other material, according to the degree of inflammation that is in each part present during the production of the lymph. But all these things need further inquiry.

LECTURE III.

Healing by immediate union: its relation to Hunter's "Union by the first intention." Description of cases. Essential characters of the process: the conditions necessary for it.

Healing by primary adhesion; its similarity to Hunter's "Union by the adhesive inflammation." General account of the process, and of its relation to other modes of healing.

Healing by granulations. General stages of the process. Periods of repose and of increased vascularity. Production of new substance. Formation of granulation-cells, and their development into cellular or connective tissue and cuticle; their deviations from this process.

I proceed now to the description of the several modes of healing of wounds, and shall at present speak of only such wounds as are externally open. Among the modes which I enumerated, the first was that which, as I stated in the preceding lecture, is effected by immediate union. It corre-

sponds with what Mr. Hunter called union by the first intention; but since that term has been applied more recently to another mode of healing, I have adopted the term "immediate union" from Dr. Macartney, who, so far as I know, was the first to observe clearly that the healing of wounds may be effected "without any intervening substance, such as blood or lymph."* He says—"The circumstances under which immediate union is effected, are the cases of incised wounds that admit of being, with safety and propriety, closely and immediately bound up. The blood, if any be shed on the surfaces of the wound, is thus pressed out, and the divided blood-vessels and nerves are brought into perfect contact, and union may take place in a few hours; and as no intermediate substance exists in a wound so healed, no mark or cicatrix remains behind.

"We have familiar examples of this mode of healing in slight cuts received on the fingers, which, after being bound up, if no inflammation be induced, perfectly heal without the individual having any unpleasant sensation in the part after the moment of the infliction of the wound. A case has been lately communicated to me of a considerable cut of the hand having been cured by this mode of direct union, without any sensation of pain, and in the short space of four or five hours."

It is singular that Dr. Macartney should speak of the process of immediate union occurring in so few and very trivial instances as these, for it seems certain that many even very large wounds are usually, in favorable circumstances, thus healed. The characteristics of this mode are, that the divided parts, being placed in exact contact, simply conjoin or reunite; no blood or new material is placed between them for a connecting bond, and no sign or product of inflammation is present. All these characteristics meet in such cases as the favorable union of flaps of skin, which have been reflected from the subjacent parts, and are then replaced or transferred to some other adjacent wounded surface.

The instances in which I have best observed it have been after operations for the removal of the mammary gland. In these operations, as you know, the usual proceeding is to remove some of the skin, including the nipple, and to uncover the rest of the surface of the gland by reflecting from it an upper and lower flap of skin; then, the gland being removed, these flaps, which are often of considerable extent, are laid down upon the parts on which the base of the gland rested, chiefly upon the fascia over the great pectoral muscle.

A specimen which I have here will illustrate the healing that may now ensue. It was taken from a woman, æt. 33, who had her breast and several axillary glands removed for cancer. Her general health seemed good, and all went on well after the operation. The flaps, which were of course very large, had been carefully laid down, strapped with isinglass plaster, and well tended. They appeared to unite in the ordinary way, and there remained only a narrow space between their somewhat retracted edges, in which space granulations arose from the pectoral muscle. Three weeks after the operation these were making good progress towards cicatrization; but erysipelas and phlebitis ensued, and the patient died in four or five days.

I cut off the edges of the wound, with the subjacent parts, expecting to find the evidences of union by organized lymph, or, possibly, blood. But neither existed; and the state of parts cannot be better described than by saying, that scarcely the least indication remains of either the place where the flap of skin was laid on the fascia, or of the means by which these parts were united. It was not possible to distinguish the relation which these parts held to each

* Treatise on Inflammation, p. 59.

other from that which naturally exists between subcutaneous fat and the fascia beneath it. There was no unnatural adhesion; but, as the specimens will still show, the subcutaneous fat which did lie over the mammary gland is now connected with the fascia over the pectoral muscle, just as, for example, the corresponding fat below the clavicle is naturally connected to the portion of the same fascia that lies there. I could find small points of induration where, I suspect, ligatures had been tied, or where, possibly, some slight inflammation had been otherwise excited; and one small abscess existed under the lower flap. But, with most careful microscopic examination, I could discover no lymph or exudation corpuscles, only small quantities of what looked like the débris of such oil-particles or corpuscles of blood as might have been between the surfaces when the flaps were laid down. In short, we cannot otherwise or more minutely describe this healing than by the term "immediate union;" it is immediate, at once in respect of the absence of any intermediate substance placed between the wounded surfaces, and in respect of the speed with which it is accomplished.

Opportunities of examining wounds thus healed being rare, I made three experiments on rabbits (with my friend Mr. Savory), and found the description I have just given quite confirmed. The specimen I have here affords a good example. A portion of skin that my extended fingers would just cover, was raised from the back of a rabbit, replaced and fastened down with a few sutures. Three days afterwards the rabbit was killed: the edges of the wound were slightly retracted, and the space between them was covered with scab; for about half an inch under the edge of the replaced flap of skin, the tissue was inflamed and infiltrated with exudation-matter; but beyond this no trace of the injury or of its healing could be seen. The parts appeared as they had appeared before the operation. Even the microscope could detect only a slight infiltration of inflammatory matter, which one might certainly ascribe to the wound being open at its edges, and to some hairs having by accident been enclosed under the flap when it was replaced.

Of course, it is only from such examinations as these after death, that we can speak certainly of the absence of inflammation and of all intermediate uniting substances, yet confirmatory evidence may be obtained from the examination of any such wound during life,—I mean any such case as that of a flap of skin raised up, then laid down on the subjacent wounded surface, and there uniting favorably; or any case of that kind of plastic operation in which a flap is raised, and then made to slide to some further position. In such cases, with favorable progress, no sign of inflammation is observed; though, if the skin were in even a small degree inflamed, it could scarcely fail to be manifested by the ordinary appearances of redness and heat. If the flap be pressed, no fluid oozes beneath its edges (I speak, of course, of only such cases as are making favorable progress), and after one or two days, according to the extent of the wound, the flaps will move on the subjacent parts, not with the looseness of a part separate from them, nor with the stiffness of one adherent through inflammation, but with the easy and pliant sliding which is peculiar to the natural connection of the skin with the subjacent fascia.

Such is the nature of "immediate union," the best imaginable process of healing. Two conditions appear essential to it—first, exactness of the coaptation of the wounded surfaces; and secondly, the absence of all inflammatory process.

To obtain the former, the simple replacement of the raised pieces of skin may sometimes be sufficient. But there is a class of cases to which this mode of healing is peculiarly applicable, and in which more than this may be

required : I refer to the removal of large subcutaneous tumours,—fatty tumours and the like,—where, after the operation, large cavities are left, and commonly left to granulate. In these cases I venture to express my belief that modern surgery does not often enough employ the older method of carefully and softly padding the parts, and of so bandaging them that the exposed surfaces may be held in contact for the one, two, or three days necessary for immediate union. Many surgeons, I know, commonly employ these means ; but by many—and, I think, the majority—they are avoided, through fear of exciting inflammation by over-heating the parts, or hindering the discharge of secreted fluids. Doubtless, no single rule of management would be safe ; but I think with regard to this fear of exciting inflammation, it need not be entertained, if the means I have alluded to be employed only during the first two or three days after the infliction of the wound. For one may generally observe that, for at least two or three days after such an injury as an amputation, the raising a flap of skin in a removal of the breast, or the like, scarcely any reparative process appears in the parts that are kept from contact, no granulations are formed, no pus secreted, only a little serous-looking fluid oozes from them. Now, during this calm, which would certainly never be disturbed by the parts being softly padded and kept in perfect rest, the immediate union may be accomplished : if, through any untoward circumstance, it be not in this period completed, its occurrence is, I believe, impossible, and then the means more appropriate for other methods of healing may be employed.

The attainment of the other nccessary condition—the absence of inflammation—is quite consistent with these means for insuring perfect and continued contact of the wounded surfaces. How the condition is to be fulfilled I need not say : the means are some of those that are commonly laid down for preventing inflammation from being, as it is said, more than is necessary for the union by the first intention ; and the best of them are temperance and rest. The necessity of observing them will appear the greater, if it is remembered that what is wanted for immediate union is, not a certain undefined slight degree of inflammation, but the complete absence of inflammation ;—for, the probability of the occurrence of immediate union may be rcckoned as being in an inverse ratio to the probability of inflammation occurring in the time necessary for its accomplishment.

I pass now to the second mode of repair that I enumerated—that, namely, *by primary adhesion.*

This is the process which Mr. Hunter named union by adhesion, or union by the adhesive inflammation. My reasons for preferring the term "primary adhesion," will presently appear. He says (vol. iii, p, 253,) "Where the former bond of union," [*i. e.*, the union by blood or by the first intention,] "is lost in a part, to produce a ncw one, a second operation takes place—namely, inflammation." Observe how carefully Mr. Hunter distinguishes the case in which inflammation ensues, from that in which none is necessary : and presently after, "if the divided parts are allowcd to remain till the mouths of the divided vessels are entirely shut, inflammation will inevitably follow, and will furnish the same materials for union which are contained in extravasated blood, by throwing out the coagulated lymph ; so that union may still take place, though some time later after the division of the parts. This inflammation I have called the adhesive." On this sentcnce, Mr. Palmer, expressing the opinion entertained by all the pathologists of ten or twclve ycars ago, says—"It is now gencrally considered that union by the first intention and adhcsive inflammation are essentially the same processes, modified by the degree of inflammation. Union by thc first intention is uniformly attended with some degree of pain and swelling, togcther with increased heat and

vascularity, which, taken conjointly, constitute the definition of inflammation." And again: "According to the modern views, the modes of union above detailed" [*i. e.*, the modes of union included by Mr. Hunter under the union by the first intention,] "are always accompanied by adhesive inflammation. . . . . The parts are united, not by the extravasated blood becoming vascular, but by the effusion and organization of coagulable lymph."

After what I have said respecting the process of immediate union, it may appear that Mr. Hunter was more nearly right than his successors. It would be an instructive piece of the history of surgery to show exactly how this truth being mixed with error came, therefore, to be thrown away, and to make room for an error which had less truth mixed with it. The stages of transition in opinions seem to have been that—first, sufficient reason was found for disbelieving his statement, that blood forms the bond of union by the first intention; then, as it was assumed that there must always be some intermediate bond, this, it seemed, could be none but coagulable lymph. Now, coagulable lymph being known only as the product of inflammation, it followed that inflammation must be necessary for the healing of every wound; and then there ceased to be any distinction between the union by the first intention and the union by adhesion; both alike seemed to be the result of lymph, the product of inflammation, being effused between the wounded surfaces, and united to them both.

The typical examples of union by primary adhesion may be watched in the cut edges of skin that are brought close together. Here, when the cut surfaces are not in exact contact, the wound is exposed, and lymph is formed, and fills up the space; or, when they are in contact, the sutures, or other means employed to keep them so, excite inflammation enough for the production of some lymph between them. The lymph organizing itself, and becoming vascular, connects the two edges or surfaces, and forms between them a thin layer of cellular tissue, on the surface of which, if it be exposed, a very delicate layer of cuticle is developed. The smooth shining surface of this cuticle gives the peculiar character of the scar, and one that scarcely changes, except in the alteration of apparent colour when the new material becomes less vascular.

The lymph effused in the healing by primary adhesion always, so far as I know, developes itself through nucleated cells, as the lymph of acute inflammation does; doubtless, the whole process is very similar to that of the adhesion of inflamed serous membranes.

It may be very quickly accomplished. Lately, a boy died eighty hours after receiving a lacerated wound of the abdomen; and, for forty-eight hours of these eighty, he was so manifestly dying, that I think no reparative process could have been going on. A portion of the edges of the wound was united with lymph, which presented well-marked cells, like those of granulations, and contained new-formed blood-vessels.

But it may be accomplished more quickly than in this case. If a small abscess be opened, and the edges of the opening are not gaping or inverted, they may be found united, except at the middle, within twenty-four hours. I have seen them so united with a distinct layer of soft, pinkish, new substance, in a wound made seventeen hours previously.

There are no cases in which the process of primary adhesion can be better observed than after operations for hare-lip. Possibly the inner portions of the wounds made in them may be healed by the immediate union, when the surfaces have been in exact coaptation; but the edges of the skin and mucous membrane seem always united by the adhesive inflammation, for a scar is always visible,—a scar formed by the lymph organized into cellular tissue and

epithelium—a sear which, as well as any, shows how little of assimilative force, can be exercised by adjacent tissues; for, narrow as it may be, it does not become quite like the adjacent skin, nor, like it, bear perfect epidermis and hair.

The history of union by primary adhesion cannot be conveniently completed till an account has been given of the healing by granulations and by secondary adhesion. Of these I will next speak: now I will only say of this union by primary adhesion, that it is less desirable than that of immediate union, because—1st, it is, probably, not generally so speedy; 2dly, it is not so close, and a sear is always formed by the organization of the new matter; and 3dly, the formation of lymph-cells is a process so indefinitely separated from that of the formation of pus-cells, that union by primary adhesion is much more likely to pass into suppuration than any process is in which no lymph is formed.

In describing the modes of healing by *granulations* and by *secondary adhesion*, I shall venture again to take my account from certain typical examples: such as cases in which, after amputation of the limbs, the surfaces of the wound are not united by either of the means already described, but, as the expression is, are "left to granulate;" or such cases as the removal of a breast, and subsequent suppuration of the flaps and the exposed fascia; or such as wounds into inflamed parts, when the edges gape wide asunder, and the spaces left between them are filled up with granulations. These may serve as examples of a process which, although in all cases it may preserve certain general features of similarity, is yet in detail almost infinitely, and often so inexplicably, diversified, that any more than a general account of it might fill volumes.

Granulations will generally arise on all wounded surfaces that are left open to the air and are not allowed to dry; they will do so whether this exposure be continued from the first infliction of the wound, or commence after the edges, which have been brought together, have been again forced asunder by the swelling of the deeper-seated parts, or by hemorrhage, or secretion of fluid, between them. Exposure of a wound to the air is not prevented by any ordinary dressings: the air that is enclosed beneath them, or that can penetrate them, appears to be quite enough to determine all the difference of the events that follow open and subcutaneous injuries.

The simplest case for illustration is that of an open gaping wound, which, from the time of its infliction, is only covered, as in ordinary practice, with water dressing, or some soft and moist substance. Blood gradually ceasing to flow from the surface of such a wound, one may see still some blood-tinged serous-looking fluid oozing from it; and the material on the surface of the wound, examined with the microscope, will be found to contain an abundance of the white corpuscles of the blood, imbedded apparently in a fibrinous film. The existence of these corpuscles on the surface of the wound, especially on those of wounded muscles and fasciæ, appears to depend only on their peculiar adhesiveness. One sees them adhering much more firmly than ever the red corpuscles do to the walls of the capillary blood-vessels, and to the glass on which they are examined; and I should think we may thus explain their collecting on cut surfaces; while the other constituents of the blood flow away, the white corpuscles, and probably, also, some of the fibrine quickly coagulating, adhere to the surface, which, in comparison with what they naturally flow over, is very rough, and therefore favorable to the quick coagulation and entangling of the fibrine.

I am not aware of any facts that would prove what share the white corpuscles thus accumulated may take in the healing of a wound. They do not

hinder it; for it is by many believed to be favorable to union by adhesion, to leave cut surfaces exposed till they appear glazed over with a whitish film, and then to put them into contact. This glazing consists of fibrine and white blood-corpuscles. It is probable the corpuscles are organized; but I know of no facts bearing on the point, and it is one which I think experiments on animals could hardly be made to illustrate.

But if a wound be still left open, this glazing remains on such parts as it may have formed on, especially on the exposed muscles. No evident change ensues in it, except that it appears to increase slowly, and makes the surface of the wound look as if covered with a thin greyish layer of buffy coat. This increase of glazing is the prelude of the formation of granulations; but while it is going on there is, in and about the wound, an appearance of complete inaction,—a sort of calm, in which scarcely anything appears except a slight oozing of serous fluid from the wound. The calm continues from one day to eight, ten, or more, according to the nature and extent of the wounded part, and the general condition of the body. In a cut or sawn hard bone, ten days at least will generally elapse before any change is manifest; in cancellous bone the change ensues a few days more speedily: on the under surface of a large flap of skin, with subcutaneous fat, three days may thus pass without change; on the cut or excoriated surface of the more vascular part of the skin, two days or three.

These periods of repose after severe injury are of equal interest in physiology and in surgery; but in the former it is only the interest of mystery. Observations on injuries of the frog's web* make it probable that the blood is stagnant for some little distance from the wound during several days after the injury: but why it is so, and what are the changes ensuing in and about it, preparatory to its again moving on, we cannot tell. The interest to the surgeon watching this period of repose is more practical; the calm may be the brooding time for either good or evil; whilst it lasts, the mode of union of the wound will, in many cases, be determined: the healing may be perfected, or a slow uncertain process of repair may be but just begun; and the mutual influence which the injury and the patient's constitution are to exercise on one another appears to be manifested more often at or near the end of this period than at any other time. Moreover, in general, the time at which, on each tissue, granulations are produced, is determined by this calm; for they begin to be distinctly formed at its end. Thus, on a stump, after a circular amputation, one may find the margin of the skin and the surface of the muscles well covered with granulations, while the surface of the fat reflected with the skin is barren of them, and the sawn walls of the bone are dry and bare. But from the sawn end of the medullary tube there may already protrude a florid, mushroom-shaped mass of granulations, overhanging the adjacent walls: as if parts in which nutrition is habitually carried on under restraint within hard and rigid boundary-walls were peculiarly apt to produce abundant organizable material as soon as they are released.

But suppose the period of calm after the violence of the injury to be well overpast—How does the right process of repair set in? Apparently, first of all, by the supply of blood to the injured part being increased.

The experiments on injuries made on the webs of frogs, to which I have already referred, have shown that immediately after the infliction of an injury, the blood in the adjacent parts remains for some days quite stagnant; and we may believe the same occurs, but for a shorter time, in our own case. During

* See especially those detailed by Mr. Travers in his Essay on Inflammation and the Healing Process.

this stagnation, materials may ooze from the vessels enough to form the glazing of the wounded surfaces of certain parts; but before granulations can be formed, the flow of blood must again begin, and its supply must be increased by enlargement, and perhaps by multiplication, of the vessels in the injured part. Now, we cannot often see this increase so well in soft parts as in bone exposed after injury. If, in this condition, compact bone be closely watched, there may be seen, two or three days before the springing up of granulations, rosy points or minute blotches, which gradually deepen in their hue, and become larger. From these, presently, granulations will arise. The same process may be well seen when a portion of the skull has been exposed, as by suppuration under the pericranium. In such a case, which was under my care for a time last autumn, nearly one third of the upper part of the skull was bared, and it became dry and yellowish, and looked quite lifeless; but after some days a few rosy points appeared on its surface, and these multiplied and enlarged, and from each of them granulations grew up till the whole surface of the skull was covered. We watched them nearly every day, and it was evident that, in all cases, an increased supply of blood preceded the production of the new material from which granulations were to be formed.

Doubtless just the same happens in soft parts as in bone; so that it may be stated generally that the first visible change that ensues after the period of calm,—the period of incubation, as it is called,—is an increased supply of blood to the parts in which repair is to ensue. This, probably, corresponds exactly with the increased afflux of blood which ensues in inflammation; and Mr. Travers' and other observations on the healing of the frog's web, make it nearly sure that this increased afflux is attended with slower movement of the blood, or at first even with stagnation of the blood, in the minute vessels nearest to the cut edges or surface.

Of the force by which this increased afflux of blood is determined, I believe that as yet no sufficient explanation can be rendered; but the fact serves to show that the ordinary process of granulation is, in its commencement, morbid —beneficial, indeed, in its end or purpose, but morbid in its method—comparable with the process of inflammation more than with any of those that are natural to the body. The process of granulating displays herein two points of resemblance to inflammation, and of dissimilarity from natural processes: namely, 1st, that the increased quantity of blood moves more slowly than in health, while in the naturally increased supply its movement is not retarded; and 2dly, that the increased supply precedes the increased production of material. For, in the discharge of natural functions, the increased supply of blood to a part appears always to be a secondary event, the consequence of some increase in the formation of the part. As in the embryo, many parts form themselves before blood appears—and the growth of these and other parts always a little precedes the proportionate supply of blood to them, —so always, subsequently, the increase or diminution of growth, or any other organic act, appears to precede, by some small interval, the proportioned change in the supply of blood. But with unnatural and morbid processes it appears to be different: in these, with inflammation for their type and chief example, the increased afflux of blood precedes the increased production of material to be organized, and the decrease of blood precedes the decrease of organic processes.

That which next follows, after the increased afflux of blood, is the effusion of the material that is to be organized into granulations. This is added to the glazing that already exists upon some surfaces, and where none such exists, as on fat or bone, is accumulated on the bare surface of the wound. No account

of this process of effusion, so far as it is visible to the naked eye, can be better than Mr. Hunter's (iii, 491). "I have often been able," he says, "to trace the growth and vascularity of this new substance. I have seen upon a sore a little white substance, exactly similar, in every visible respect, to coagulating lymph. I have not attempted to wipe it off, and the next day of dressing I have found this very substance vascular; for by wiping or touching it with a probe it has bled freely. I have observed the same appearance on a bone that was laid bare. I once scraped off some of the external surface of a bone of the foot, to see if the surface would granulate. I remarked, the following day, that the surface of the bone was covered with a whitish substance, having a tinge of blue: when I passed my probe into it I did not feel the bone bare, but only its resistance. I conceived this substance to be coagulating lymph thrown out by inflammation, and that it would be forced off when suppuration came on; but, on the succeeding day, I found it vascular and appearing like healthy granulations." To this, little can be added more than the microscope has shown. In the minute structure of granulations, or at least of such growths of new substance as present all the characters that we imply by that term,—the bright ruddy texture, the pointed and granulated free surface, the succulency and abundant supply of blood,—in these we may discern two varieties, corresponding with the varieties of lymph that I have already spoken of. For, in subcutaneous injuries or diseases, granulations sometimes form which develop themselves into cellular tissue, through nucleated blastema; so I found in a case of simple fracture in which the ends of the bone remained long ununited: they were enclosed in a cavity formed by condensation of the surrounding tissues, but containing no pus, and were covered with a distinct layer of fluid granulations. It was just such a case as that which Mr. Hunter had in view, and preserved,* as an instance of the formation of granulations without suppuration, in the repair of subcutaneous fractures and other injuries.

But in by far the greater proportion of cases, granulations are only formed in exposed injuries: in these they consist of cells that may develope themselves into fibro-cellular tissue; and of such as these I will now exclusively speak.

Cells upon cells, such as I have already described, are heaped up together in a layer from half a line to a line thick, without apparent order, and connected by very little intermediate substance. Singly they are colourless; but in clusters they are ruddy, even independent of the blood-vessels. In granulations that are making healthy progress, one can especially trace that multiplication of nuclei of which I have already spoken. In the same, too, one can conveniently trace the cells in various stages, according to the position they occupy: the deeper-seated ones being always most advanced, and often much elongated, or nearly filamentous; while the superficial ones are still in a rudimental state, or near the edges of the granulating surface are acquiring the character of epithelium-cells. The cellular tissue thus constructed by the development of the granulation-cells finally assumes all the characters of the natural examples of that tissue. Thus it is found in the layer of substance of which scars that are formed in the place of granulating wounds are composed. After some time, also, elastic tissue is mingled with the fibro-cellular; but this, as I have already said, appears to be effected by a later process. I found in one case no elastic tissue in scars that had existed, the one twelve months, the other eighteen months; but in scars several years old I have always found it.

The cuticle, also, that forms on granulations gradually approximates more

* College Museum, No. 16.

nearly to the perfect characters, and, like the fibro-cellular tissue that it covers, presents the interesting fact of adaptation to the purposes of the part on which it is placed. Thus in granulating wounds or ulcers on the sole of the foot, one may often see that, from the first, the new cuticle is more opaque and thicker than it is on other parts, on which the natural cuticle, in adaptation to the protection required from it, is naturally thinner: and let it be observed that this peculiar formation of the new cuticle is in adaptation to conditions not yet entered upon. It justly excited the admiration of Albinus* when he saw in the fœtus, even long before birth, the cuticle of the heel and palm thicker than those of other parts,—adapted and designed to that greater friction and pressure to which in future time they would be exposed. It is the same when, in adult life, new cuticle is to be formed on the same parts: while it is forming, all pressure and all friction are kept away, yet is it constructed in adaptation to its future exposure to them. Surely such a provision is, beyond all refutation, an evidence of design; and surely in this fact we may discern another instance of the identity of the powers that are put in operation in the acts of first construction and of repair.

But before I end this lecture, let me add, that although one may so clearly trace, in the development of granulation-cells, and in the end which they achieve by the formation of fibro-cellular tissue and cuticle, an imitation of the natural processes and purpose of the corresponding developments in the embryo, yet is there a remarkable contrast between them, in regard to the degrees in which they are severally liable to defect or error. We can scarcely find examples of the arrests or errors of development of mere structure in the embryo, but such events are quite common in the formation of granulations, as well as of all other new products. All the varieties in the aspect of granulating wounds and sores, which the practised eye can recognise as signs of deflection from the right way to healing, are so many instances of different diseases of the granulation-substance,—diseases not yet enough investigated, though of much interest in the study of both the healing process and the organization of new products in inflammation. A comparatively few observations enable one to trace morbid conditions of these new structures closely answering to those long known in the older and more perfect tissues. Thus, one may find simply arrested development of granulations; as in the indolent healing of wounds and ulcers, whether from locally or generally defective conditions. Herein even years may pass, and the cells will not develope themselves beyond one or other of their lower forms. There is probably a continual nutrition of particles among such cells, as in common nutrition,—or they may increase, as in growth; but no development ensues, and the wound or the ulcer remains unhealed.

In other cases, the cells not only do not develope themselves, but they degenerate, becoming more granular, losing the well-marked characters of their nucleus, and acquiring all the structures of the pus-cell; thus are they found in the walls of fistulæ and sinuses. Or, worse than this, the granulation-cells may lose all structure, and degenerate into a mere layer of débris and molecular substance. Thus they may be found on the surface of a wound for a day or so before death in exhaustion, or in erysipelas, or fever. With more active disease granulations become turgid with blood, or œdematous: such are the spongy masses that protrude beyond the openings leading to diseased bone; or they inflame, and abundant large inflammatory granule-cells are found among their proper structures; or they suppurate internally, and purulent infiltration pervades their whole mass.

All these are among the many hinderances to healing: these are the dangers

* Annotationes Academicæ.

to which the healing by granulations is obnoxious: it is the proneness to these things that makes it even slower and more insecure than, in its proper course, it might be. But to these I must again refer when I speak of the formation of pus, and the relation of its cells to those of granulations.

LECTURE IV.

Development of blood-vessels in granulations; their modes of formation in the embryo: their formation in granulations and similar new productions, by outgrowths and channelling.
Healing by secondary adhesion, or union of granulations.
Healing by scabbing; its several modes, and advantages.
Process of suppuration. Relation of the pus-cells to granulation-cells and inflammatory exudation-cells, and of the liquor puris *to fibrinous blastema. Probable degeneration of other cells into pus-cells.*
Characters of scars: their contraction and gradual perfection.

With the structural development of the granulation-cells, described in the last lecture, there coincides a chemical change which seems to be the contrary of development; for the granulation-substance, being converted from albuminous into horny and gelatinous principles, becomes, in chemical composition, less remote than it was from the constitution of inorganic matter. At its first effusion, the reparative material has the characters of fibrine; afterwards, when in the form of granulations and of young fibro-cellular tissue, its reactions are so far altered that it presents the characters of pyine, a somewhat indefinite principle, yet an albuminous one; finally, in its perfect development, the new formed fibro-cellular tissue is gelatinous, and the cuticle appears to be like other specimens of horny matter.

These changes are in conformity with what appears to be a general rule—namely, that structures which are engaged in energetic development, self-multiplying, the seat of active vital changes, are generally of the highest organic chemical composition; while the structures that are already perfect, and engaged in the discharges of functions such as are attended with infrequent changes of their particles, are as generally of lower composition. The much higher chemical development (if I may so call it) of the blood than of the greater part of the tissues that are formed from it, is a general instance of this; in it albumen and fibrine predominate, and there is no gelatine; in them gelatine is abundant, and fatty matter: and both these, through their affinities to the saccharine and oily principles, approach the characters of the lower vegetable and inorganic compounds.

The granulation-substance is a good instance in point: while lowly developed, but in an active vegetative life, it is albuminous; when perfect in its development, its perfected structures are gelatinous or horny. In this state its particles have probably a longer existence: they exchange a brief life of eminence for longevity in a lower station.

I have spoken hitherto of the development of only those structures which form the proper material of granulations, and of the scars that remain after the healing of wounds. But, commensurately with these, blood-vessels, and perhaps, also, nerves, are formed. Of these, therefore, I will now speak.

In the last lecture I referred to the changes that ensue in the circulation of a wounded part. At first, it appears that the blood stagnates in the vessels immediately adjacent to the wound. This is evident in the wounds made in

frogs' webs, and is most probable in the case of wounds in our own tissues; for else we could hardly understand the total absence of bleeding from a surface on which, as in every large wound, myriads of small vessels must be cut and lie exposed. But after a time, of various duration in the different tissues, the movement of the blood is renewed, though not to its former velocity; the vessels of the wounded parts enlarge, and they all appear more vascular. Then the material of granulations, already in part effused, accumulates, and very soon blood and blood-vessels appear in this material.

By what process are these new vessels formed? Mr. Hunter's opinion was, (and it appears still to be often entertained) that both the blood and vessels form in the granulation-substance, as they do in the germinal area of the chick; and that, subsequently, they enter into communications with the vessels and blood of the part from which the granulations spring. But it certainly is not so; although the development of vessels is according to a method equally natural with that described by Mr. Hunter.

In embryos, we may discern three several modes according to which blood-vessels are formed—a good example of the manifold ways by which, in development, the same end may be reached. In the first and earliest method, they are constructed around the blood-corpuscles, which being gradually developed from some of the embryo-cells, are laid-out in the plan of the earliest and simplest circulation of the blood. Thus, in the larvæ of Batrachia, as in the common tadpole, before even the walls of a heart are formed, one sees a crowd of embryo blood-corpuscles collected where the heart is to be; and, in the substance of the out-growing external branchiæ, are looping lines of blood-corpuscles, around which as yet no walls can be discerned. It is so, also, with the blood and vessels of the warm-blooded vertebrata: the corpuscles are rapidly developed from some of the cells of the germinal area, and are laid out in the plan of the heart, and the terminal sinus, and their communicating channels. But at first it is only as a plan: the blood does not move, and is not walled-in. Then, as the heart and vessels are formed around the blood, its circulation in these simple channels is established. In this case, the vessels appear to be formed of the plasma or fluid material which lies between the cells, and gradually assumes the condition of a membrane, and is then developed into the more complex structures of the blood-vessels.

After this earliest period of embryo-life, it is probable that blood is never formed except within the vessels already constructed. It would seem as if none but the original embryo or germ cells could be directly transformed into blood-corpuscles; all those that are later made derive their materials through a process of gradual elaboration in lymph or blood-vessels, to which process no resemblance can be discerned in the substance of granulations. To increase the extent and number of vessels that must be added in adaptation to the enlargement and increasing complexity of the embryo, two methods are observed; of which the one appears chiefly appropriate to the interstitial formation of new vessels, the other, for the construction of those of superadded or out-growing parts.

For the former, one finds, in the interspaces of vessels already existing, primary cells, which enlarge and elongate, and send out branches in two or more directions,—branches sometimes so exceedingly slender, that one might take them for mere threads of embryonic fibro-cellular tissue. But they are hollow: and while some of them are directed into anastomosis with each other, others extend towards, and open with dilatations, into the vessels already formed and carrying blood. Then, these fine branches of each stellate cell becoming larger, while the main cavity of the cell, from which they issued, attenuates itself, they are altogether transformed into a network of nearly

uniform caliber, and through these the blood, entering by the openings of communication with the older vessels, makes its way.

Thus the wide spaces of the network formed in the primordial circulation are subdivided into smaller meshes, and each part receives a more abundant supply of blood. Such a development (as shown in the diagrams) may be seen in the soft gelatinous matter within the amnion of embryo-sheep, and in the tissue of the tail of the tadpole; though in this last the development is often abortive.

But, for parts that are formed by super-addition or out-growth, another mode of development of blood-vessels is observed; and this, I believe, is the only mode in which new blood-vessels are ever formed for granulations, or for superficial deposits of lymph, adhesions, and the like. The sketch is made from what may be seen in the growing parts of the tadpole's tail: it accords with what Spallanzani observed of the extension of vessels into the substance of the tail when being reproduced after excision. Mr. Travers and Mr. Quekett* watched the same in the new material formed for the filling up of holes made in the frog's web: the same process is indicated in the specimens illustrating the repair of similar wounds which were purchased by the College from the Museum of the late Dr. Todd, of Brighton; and there is no reason to suppose that any other method prevails for the supply of blood-vessels to any granulations, or similar new productions. For, though the process in granulations or in lymph cannot be exactly watched during life, yet every appearance after death is consistent with the belief that it is the same as I have described, and no appearances are found which would justify a suspicion that either of the other methods of development has occurred.

The method may be termed that by *out-growth* from the vessels already formed. Suppose a line or arch of capillary vessel passing below the edge or surface of a part to which new material has been superadded. The vessel will first present a slight dilatation in one, and coincidently, or shortly after, in another point, as if its wall yielded a little near the edge or surface. The slight pouches thus formed gradually extend, as blind canals or diverticula, from the original vessel, still directing their course towards the edge or surface of the new material, and crowded with blood-corpuscles, which are pushed into them from the main stream. Still extending, they converge; they meet; the partition-wall, that is at first formed by the meeting of their closed ends, clears away, and a perfect arched tube is formed through which the blood, diverging from the main or former stream and then rejoining it, may be continuously propelled.

In this way, then, are the simplest blood-vessels of granulations and such out-growths formed. The plan on which they are arranged is made more complex by the similar out-growths of branches from adjacent arches, and their mutual anastomoses; but, to all appearance, the whole process is one of out-growth and development from vessels already formed. And I beg of you to consider the wonder of such a process; how, in a day, a hundred or more of such loops of fine membranous tube—less than 1-1000th of an inch in their diameter—should be upraised, not by any mere force of pressure, though with all the regularity of the simplest mechanism, but each by a living growth and development, as orderly and exact as that which we might trace in the part most essential to the continuance of the life. Observe, that no force so simple as even that of growth or mere assimilation can determine such a result as this: for, to achieve the construction of such an arch, it must spring with due adjustment from two determined points, and then its flanks must be commensurately raised, and these, as with mutual attraction, must approach and meet

* On Inflammation and the Healing Process.

exactly in the crown. Nothing could accomplish such a result but a power determining the concurrent development of the two out-growing vessels, in conformity with the same law as that according to which the same power actuates the germ. We admire the intellect of the engineer, who, after years of laborious thought, with all the appliances of weight and measure, and appropriate material, can begin at points wide apart, and force through the solid masses of the earth one tunnel, and can wall it in secure from external violence, and strong to bear some pondrons traffic;—and yet he does but grossly and imperfectly imitate the Divine work of living mechanism, that is hourly accomplished in the bodies of the least conspicuous objects of creation —nay, even in the healing of our casual wounds and sores.

The wonder of the process is, perhaps, in some degree, enhanced by the events that will follow what may seem to be an accident. When the new vessel has begun to project, it sometimes bursts; and the diagram shows what then will happen. (I have to thank Mr. Quekett for the sketch which he made while assisting Mr. Travers, in the examinations of which he has published the results in his work on 'Inflammation and the Healing Process.') The blood-corpuscles that issue from the ruptured pouch or diverticulum collect in an uncertain mass within the tissue, like a mere ecchymosis; but, before long, they manifest a definite direction, and the cluster bends towards the line in which the new vessel might have formed, and thus opens into the other portion of the arch, or into some adjacent vessel. For this mode of formation from vessels, the name of *channelling* seems more appropriate than that of out-growth; for it appears certain that the blood-corpuscles here make their way in the parenchyma of the tissue, unconfined by membranous walls. That they do so in a definite and purposive manner, though their first issue from the vessel has appeared so accidental, may be due to the fact that, in the more regular development by out-growth, the cells of the parenchyma concur with the extension of the new vessels, by clearing away from them as they approach; so that, even before the out-growth, the way for it, or for its contents, (should they happen to escape,) is, in some measure, determined.

The occurrence of such a process of channelling as is here indicated loses all improbability, when we remember that in insects the blood habitually flows, in a considerable and impotant part of its course, through sinuses, spaces, or channels without proper walls, such as are here supposed to exist only for a time. In such channels, too, it seems very probable that the blood moves in part of its course through some of the softer medullary and other morbid growths: at least, in these I have often found it impossible, with the microscope, to detect even the rudiments of such vessels as could carry their great supplies of blood.

The general plan of arrangement of the blood-vessels in granulations agrees with this account of their development by out-growth. Some of Sir A. Cooper's preparations in the Museum* of the College show how the new vessels extend from the parts on which the granulations lie, in lines directed vertically towards their surface, not often dividing, but communicating on their way by frequent transverse or irregular branches. Of these branches, some probably represent the loops or arches successively formed in the deepening layer of granulation-cells, while others must be formed by offshoots from the sides and other parts of the several arches. Near the surface of the granulations, at a very little distance below the outermost layer of the cells, the vessels communicate much more frequently, and form their loops or terminal arches—arches of junction between the outgoing and the returning streams of blood.

* Museum of the College of Surgeons, Nos. 19, 20, 356.

On the same plan are formed the vessels of the walls of abscesses lined with granulations; but here (at least in the specimens I have been able to examine) the vertical vessels are not so long, and the whole number of vessels is generally greater. I believe the vessels of granulating ulcers are always similarly arranged; so they are represented by Mr. Liston* in a common ulcer; so, also, Sir A. Cooper† described them in granulations from an ulcerated scirrhous cancer; and I have found the same general plan in the warty ulceration of soot-cancer on the scrotum.

The structure of the new vessels formed in granulations also agrees with the described mode of development. In the earliest period of their appearance they present no indication of being formed by the fusion, or any transformation of the granulation-cells, but consist of thin membrane, in which, if it be not quite simple, nuclei or cytoblasts are imbedded. These nuclei pass through the same stages of development, by narrowing and elongation, as those I have described in the nucleated blastema; and thus they become like the pieces of flat fibre that one sees on the walls of the original vessels of the same size. Like them, also, they are arranged, some longitudinally and some transversely to the axis of the vessels, giving them, as the diagram shows, a character altogether peculiar.

Respecting the purpose of the supply of blood thus sent to granulations, one traces, in the development of vessels, a series of facts exactly answering to those in ordinary embryonic development. Organization makes some progress before ever blood comes to the very substance of the growing part; for the form of cells may be assumed before the granulations become vascular. But, for their continuous active growth and development, fresh material from blood, and that brought close to them, is essential. For these the blood-vessels are formed; and their size and number appear always proportioned to the volume and rapidity of life of the granulations. No instance would show the relation of blood to an actively growing or developing part better than it is shown in one of the vascular loops of a granulation, imbedded among the crowd of living cells, and maintaining their continual mutations. Nor is it in any case plainer than in granulations, that the supply of blood in a part is proportionate to the activity of its changes, and not to its mere structural development; the vascular loops lie imbedded in the simplest primary cells, or, when granulations degenerate, in structures of yet lower organization; and as the structures are developed, and fibro-cellular tissue formed, so the blood-vessels become less numerous, till the whole of the new material assumes the paleness and low vascularity of a common scar.

Of the development of nerves in granulations I know nothing: I have never been able to see any in either granulations or cicatrices. The exquisite pain sometimes produced by touching granulations would indicate the presence of nerves: but it would be more satisfactory to see them; for the force of contact, or the change that it produces, may be propagated through the largest granulations, and stimulate the nerves beneath them, as contact with the exterior of a tooth excites the nerve-filaments in its pulp. The sensibility that granulations seem to have may, therefore, be really that of the excited tissues from which they spring.

Lymphatics do not exist in granulations. Professor Schroeder van der Kolk has demonstrated them in false membranes by mercurial injections:‡ but, in a letter recently received, he tells me that they cannot, either by these

* Medico-Chirurgical Transactions.

† Catalogue of the Pathological Museum of the College, vol. i, p. 110, Specimen No. 246.

‡ Lespinasse, De Vasis Novis Pseudò-membranarum, figs. iii, iv.

or any other means, be traced in either scars or granulations; and, he adds, "they cannot be demonstrated in the skin, even in the healthy state, except in the scrotum."

The subject of suppuration should perhaps be considered now; but I had rather defer it till I have spoken briefly of the two remaining modes of healing open wounds—those, namely, by *secondary adhesion* and by *scabbing*.

The healing by secondary adhesion, or union of granulations, has been long and often observed; yet it has been only casually described, and having never been distinguished by a specific name, has not received that attention to which its importance in practice seems to entitle it. It occurs wherever surfaces of granulations, formed in the manner just described, well-developed, but not yet covered with cuticle, are brought into contact, and so retained at rest. As often as this happens, the cells of which the surfaces are composed adhere together; vessels passing through them form mutual communications; and the surfaces, before separate, are connected; out of the two layers of granulations, one is formed, which pursues the normal development into fibro-cellular tissue.

In all its principal characters, therefore, the process of secondary adhesion is like that adhesion for which, to mark at once their likeness and their differences, I have suggested the term of primary. In the primary adhesion, the layer of lymph, placed between the wounded and bare surfaces, is probably formed equally from both, and being developed in the same manner as the granulations on which I have spoken, probably receives vessels from both surfaces, and so becomes the medium through which the vessels communicate and combine the severed parts. In the process of secondary adhesion, the superficial cells on the surfaces of two layers of granulations are placed together, and receiving vessels from both combine them into one.

Mr. Hunter had observed this process, and says of it—"granulations have the disposition to unite with one another when sound or healthy; the great intention of which is to produce the union of parts, somewhat similar to that by the first intention, although possibly not by the same means." (iii. 493.) And "I have seen two granulations on the head—viz., one from the dura mater after trepanning, and the other from the scalp, unite over the bare bone which was between them so strongly in twenty-four hours, that they required some force to separate them, and when separated they bled."

In illustration of the process he put up a preparation,* which in his MS. Catalogue,† he described as "granulations under the skin in an abscess in the leg, which were opposed by others on the muscles, and which were to unite. Those under the skin only are saved and folded towards each other, to show the opposition of two granulating surfaces."

There are several circumstances in which the healing by secondary adhesion should be attempted,—such, for example, as I witnessed in a case which was lately in St. Bartholomew's. After an ordinary circular amputation of the thigh, no immediate union and no primary adhesion had taken place, and the whole interior of the stump was granulating. Had it been, as the expression is, left to granulate, or to fill up with granulations, the healing process would have occupied at least a month or five weeks more, and would have greatly exhausted the patient, already weakened by disease. But Mr. Stanley ordered the stump to be so bandaged that the opposite surfaces of granulations might be brought into close contact: they united, and in a week the healing of the stump was nearly perfected.

* Museum of the College of Surgeons, No. 27.

† Pathological Catalogue of the Museum of the College of Surgeons, vol. i, p. 16.

In all such cases—and I need not say that they are very frequent—the healing by secondary adhesion may be attempted without danger, and with manifest advantage.

Again: Mr. Hunter operated for hare-lip, and no primary adhesion of the cut surfaces ensued. He let them both granulate: then brought the granulations together, as in the common operation, and they united, and healed soundly.

Or, again: Mr. Skey, not long since, operated for fissure of the soft palate. The very edges of the wounds sloughed and retracted, and the case seemed nearly hopeless; but he kept in the sutures, and granulations sprang up from the edges of the cleft, after the separation of the sloughs: they met in the mid-space of the cleft, and coalesced, and formed a perfect scar.

Doubtless, cases like these are of no rare occurrence: but I am induced to mention them as illustrations of a process of which the importance and utility are not generally considered, and which is rarely applied in practice.

In applying it in practice, certain conditions are essential to success; especially that—first, the granulations should be healthy, not inflamed, or profusely secreting, or degenerated, as those in sinuses commonly are; secondly, that the contact between them should be gentle but maintained; and perhaps they should be as much as possible of equal development and alike.

The treatment of wounds by scabbing may be regarded, as Mr. Hunter* says, as the most natural one—for it requires no art. It is the method by which one sees nearly all open wounds healed in animals; for in them, even in the warm-blooded, it is difficult to excite free suppuration from the surfaces of wounds: they quickly become coated over with a scab formed of the fluids that ooze from them and entangle dust and other foreign bodies; and under such a scab the scar is securely formed.

In general, the scabbing process is effected by some substance effused on the surface of the wound, drying there, and forming a hard and nearly impermeable layer. The edges of this substance adhere over those of the wound, so as to form for it a sort of air-tight covering, under which it heals without suppuration, and with the formation of a scar, which is more nearly like the natural parts than any scars formed in wounds that remain exposed to the air, and which does not, like them, contract, so as to produce deformity of the parts about it.

The scab may be formed of either dried blood, dried lymph and serum, or dried purulent fluid. Instances of the healing of wounds under dried blood are not rare. It is especially apt to occur in the cases of wounds in which a large flat surface is exposed, as after the removal of the mammary gland. The most remarkable case of this kind is recorded by Mr. Wardrop,†—the largest wounded surface he ever saw, remaining, after the removal of a diseased breast, almost entirely healed under a crust of blood, which remained on for more than thirty days. But the most common examples of healing under blood-scabs are in small wounds—such as are made in bleeding, or more rarely in some compound fractures. The excellent, though nearly obsolete, practice of laying on such wounds a pad of lint soaked in the blood, was a good imitation of the most natural process of their repair.

If a blood-scab be not formed over a wound, or if such a one have been detached after being formed, then at once a scab may be derived from the serum and lymph that ooze from the surface of the wound. Thus it is commonly with wounds in animals that are left to themselves, and in many small

* Works, vol. iii, 262.

† In his Lectures on Surgery, in the Lancet for 1832-3, vol. ii.

wide-open wounds in our own case. Thus, also, I imagine, the best healing of burns and scabs is effected, when the exposed surface is covered with cotton-wool or other substance, which, as the oozing fluids become entangled with it, may help them to form a scab.

At a yet later period, the pus produced from exposed granulating wounds may concrete on them, and they will heal under it, excluded from the air. Such a process may also ensue in the healing of ulcers, and has been successfully imitated in Mr. Stafford's plan of filling deep ulcers with wax.* In any case the healing process is probably just the same as that under scabs of blood or serum; but, I believe, it has not yet been exactly determined what are the changes that ensue in the surface beneath the scab. So far as one can discern with the naked eye, the wounded surface forms only a thin layer of cuticle on itself; no granulations, no new cellular tissue, appears to be formed; the raw surface merely skins over, and it seems to do so uniformly, not by the progressive formation of cuticle from the circumference towards the centre, as is usual in open wounds.

The healing of a wound by scabbing has always been thought a desirable process; and when one sees how quickly, by means of this process, wounds in animals are healed, and with how little general disturbance, one may well wish that it could be systematically adopted. But to this there seems some hinderance. Many surgeons have felt, as Mr. Hunter did, that the scabbing process should be permitted much oftener than it is, in the cases of both wounds and ulcers; but none have been able to lay down sufficient rules for the choice of the cases in which to permit it. Probably, the reason of this is that, at the best, in the human subject, the healing by scabbing is an uncertain process. When the scab is once formed, and the wound covered in, it is necessary that no morbid exudation should take place. Whenever, therefore, inflammation ensues in a wound or sore covered with a scab, (and this, I need hardly say, is a very common event) the effused fluid, collecting under the scab, produces pain, compresses the wounded surface, or forces off the scab, with great discomfort to the patient and retardation of the healing. I suspect that the many instances of disappointment from this cause have led to the general neglect of the process of scabbing in the treatment of wounds. The observance of perfect rest, and of the other means for warding off inflammation, might, however, yet make it an available auxiliary in the treatment of wounds, especially of large superficial ones; for, in the treatment of small wounds, collodium appears sufficient to accomplish all that scabbing would do.

Such are the several methods of healing observed after wounds of soft parts; and in connexion with them, two subjects remain to be considered, namely, the process of suppuration, and that of the perfecting of scars.

Respecting the process of suppuration, it cannot be necessary that I should give a particular account of pus, or of its general or chemical characters. I will rather endeavour to show its relations to the healing process, by illustrating the points of resemblance and of difference between it and the material of which granulations are formed.

Let me remind you that the formation of granulations is not necessarily attended with the production of pus. I have already referred to this fact in speaking of the formation of subcutaneous granulations, such as are sometimes seen on the ends of bones that do not unite, in the ordinary way, after simple fractures. Mr. Hunter also expressly describes these cases; and the same kind of granulations without suppuration may be sometimes seen springing from the ulcerated articular surfaces of bones, in cases of diseased joint without any external opening.

* On the Treatment of the Deep and Excavated Ulcer. 1829.

It would be an interesting fact if it were found that the granulations that do not suppurate are those that are formed of nucleated blastema: they are so in some cases, I know; but it is not proved of all. However, the common instances of suppurating granulations are those that are formed of nucleated cells; and with these pus may be formed, whether on an open surface, or on the walls of an abscess, or on the walls of an inflamed serous cavity, when, as in empyema, the lymph acquires a free granulated surface.

[To illustrate the relations between pus and granulations, at least so far as their component cells are concerned, Mr. Paget exhibited a diagram, which was copied from sketches that I made, at the same time, of some granulation-cells from the walls of a sinus, and some pus-cells from a healthily granulating wound.] I chose, he continues, these sources purposely, that I might be able to compare ill-developed granulation-cells with well-constructed pus-cells: and a comparison of them shows that, whether as seen without addition, or as changed by the action of water and acetic acid, they are not to be distinguished from one another. Had I not seen the vessels in the tissue that these granulation-cells formed, I might, in the first examination, have almost thought I was deceived in thinking they were not pus-cells. Six varieties of the appearances of the cells from each source are here shown, and they severally exactly correspond. Other varieties ofform might have been drawn from both sources; but these may suffice to show the apparent identity of structure between well-formed pus-cells and the ill-developed or degenerate granulation-cells, such as are found in the walls of sinuses and the like half-morbid structures. I do not mean to say generally that granulation-cells and pus-cells cannot be distinguished; for between well-formed granulation-cells, such as are found in healing wounds, and any particles that can be found in pus, certain distinctions are almost always manifest. The pus-cells are darker, more and more darkly granular, more various in size, and more various, not in shape, but in apparent structure, more often containing particles like fatty molecules, more rarely showing a nucleus when neither water nor acid is added, and much more commonly showing a tripartite or ill-formed nucleus under the action of the acid: above all, not showing any molecular movement of their contained particles when they are distended with water. This last character, of which I was informed by Mr. Quekett, is certainly the best for the determination of pus-cells, however formed. I am not sure that it ever fails to be a sufficient mark of diagnosis for them; still, neither it nor all the rest of the characters I have enumerated are indicative of essential difference; and between even the widest extremes there are all possible gradations, till distinction is impossible; so that when you place, as I have often done, ill-developed or degenerate granulation-cells on one side of the microscope field, and pus-cells on the other, there is not a form of corpuscle on the one which is not repeated on the other.

From this, one cannot but draw the conclusion that the cells of pus are ill-developed or degenerate granulation-cells. Some of them may be degenerate, *i. e.* they may have been, as granulation-cells, attached for a time to the surface of the granulation-layer, and having been to a certain point properly developed, and having lived their time, may, in ordinary course, have been detached and shed, as epithelial cells are from healthy surfaces. They may be thus detached after more or less degeneration, and hence may result some of the modifications of form that they present; but some also, I imagine (at least in the healing of wounds), may be ill-developed—that is, imperfectly formed of the material which exudes from the surface of the granulations, and which, being exposed to the air, or being too remote from the supply of blood, cannot attain its due development, and, in an imperfectly developed state, is

soon cast off. It cannot be but that organizable matter is constantly oozing from such a surface as that of granulations; but the conditions into which it enters on that surface are such as are very likely to hinder any but the lowest and an imperfect organization.

The many characters of degeneracy that pus-cells show accord with this view; such as the general imperfection of their nuclei,—the abundance of large and fatty-looking granules in them,—the large quantity of fatty matter that chemical analysis detects,—and their limitation to certain forms, beyond which they are never found developed, though none of these forms is more highly organized than that of the youngest or most rudimental granulation-cell.

A further confirmation of the opinion that pus-cells are ill-developed or degenerate granulation-cells, is furnished in the numerous cases in which pus-cells are produced after, or together with, inflammatory exudation-cells; as in abscesses, inflammation of serous membranes, and the like. Now exudation-cells are not distinguishable in apparent structure from granulation-cells, and, like these, may show every gradation of form to that of the pus-cell; so that, from both cases, we may conclude that the true relation which the cell in granulations or in inflammatory lymph holds to the pus-cell, is that of a well-organized structure to the same structure either ill-developed or degenerate after having, up to a certain point, been duly formed. To this we are guided by the comparison of the granulation-cell, in its earliest and most imperfect state, with the pus-cell in its best condition; and the contrast becomes the stronger while we trace the one, in its vigorous life, developing itself into new and higher structures,—the other, in its decay, degenerating to lower forms and lower chemical composition.

But it is not only in the cells that we may trace this appearance of the degeneracy of pus; it is equally shown in the fluid part, or *liquor puris*, which, unlike the solid fibrinous intercellular substance of granulations and inflammatory lymph, is always albuminous, and incapable of organization, even when, by evaporation or partial absorption, it assumes the solid form.

Now this liquor puris answers to the solid and organizable blastema of granulations; and as undue liquidity is among the most decided marks of ill-formed pus, so the abundance of the blastema, in proportion to the cells, is one of the best signs that granulations are capable of quick development.

An observation, which any one may easily make, seems to indicate that the liquor puris may be the product of the degeneration and liquefaction of the solid blastema, as the pus-cells appear to be of the granulation- or exudation-cells embedded in it. If the formation of abscesses be watched, one may see, on one day, a large solid and inflamed swelling, firm and almost unyielding, giving no indication of containing any collection of fluid; but next day, one may detect in the same swelling the signs of suppuration: the border may feel as firm as before, but all the centre and the surface may be occupied with an ounce or more of matter. And observe,—this change from the solid to the liquid state may have ensued without any increase of the swelling. Such an increase must have occurred had the pus been secreted in a fluid state into the centre of the solid mass: and the changes cannot, I think, be explained except on the admission, that the inflammatory product, which was effused and infiltrated through the tissue in a solid form, has been liquefied: its exudation-cells degenerating into pus-cells, its blastema into liquor puris.

Such, briefly, is the account which may be rendered of pus in its relation to the granulating process; nor can I find any facts which are inconsistent with this view. I will only add a suspicion that other rudimental forms of tissues may, in degeneration, sometimes assume the characters of pus-cells.

The easy transition from some forms of mucus-cells to pus-cells would imply that much of the pus so readily secreted from inflamed mucous membranes is formed, not of degenerate lymph, but of their natural products, degenerated or ill-developed. And the equally indefinite line of distinction between the white or rudimental corpuscles of the blood and the pus-cells, may suggest that that most obscure affection, purulent diathesis or pyæmia, may have its essential anatomical character in the degeneration of the white blood-corpuscles. The arrested development of these blood-corpuscles appears to be a constant occurrence in all inflammations; if to this were added a degeneration of them after the arrest, I believe the suppuration of the blood would be, so far as its anatomical characters are concerned, accomplished.

Can we assign any use or purpose to the process of suppuration? In the case of abscesses and acute inflammations we may discern no more of purpose than in any other disease. But in the case of granulating wounds, the use commonly assigned to pus, that it serves as a protection to the granulations, is probably ascribed to it with reason. It does this even in the fluid state; but the devices of surgical treatment, having regard to present comfort, rarely let us see how much better it protects a wounded surface when, as in animals, it is allowed to dry into a scab.

Let us now consider the case of a wound completely healed, and the scar that occupies its place.

It is hard to describe in general terms the characters of scars, varying as they do in accordance with the peculiar positions, and forms, and modes of healing of wounds. But two things may be constantly observed in them: namely, their contraction and their gradual perfecting of their tissues.

A process of contraction is always associated with the development of granulations. Mr. Hunter has minutely described it, and preserved several specimens to illustrate it; among which are two stumps,* in which its occurrence is proved by the small size of the scars in comparison with that of the granulating surfaces which existed before them. This healing of stumps, especially after circular amputations, will always show the contraction of the granulations, even before the cicatrix is formed; for one sees the healthy skin drawn in and puckered over the end of the stump, before any cuticle is formed on the granulations, except perhaps on the very margin. And many injuries, but especially burns, show the contraction of the scar continuing long after the apparent healing is completed.

To what may we ascribe this contraction of both the granulations and the scars? It has been regarded as the result of some vital power of contraction; and possibly it may be so in some measure. Yet, on the whole, it seems rather to be the necessary mechanical effect of the changes of form and construction that the parts undergo. The same change ensues in the organization of all inflammatory products: as, *e. g.*, in false membranes, indurations, thickenings of parts, and the like consequences of the effusion and organization of lymph.

Now, in all these cases, the form of the cell, while developing itself into a filament, is so changed that it will occupy less space. The whole mass, too, of the developing cells becomes more closely packed, and the tissue that they form becomes much drier; with this, also, there is much diminution of vascularity. Thus, there results a considerable decrease of bulk in the new tissue as it developes itself; and this decrease, beginning with the development of the granulation-cells, continues, and I think sufficiently accounts for the contraction, without referring to any vital power.

The force with which the contraction is accomplished is often enormous.

* Nos. 28 and 29 in the Museum of the College.

One sees its result in the horrible deformities that follow the healing of severe burns; and I have here a specimen, in which I have no doubt that, as in one described by Mr. Curling, deep scarred and seamed depression of the outer table of the skull was caused by the contraction of granulations over it.

The improvement and perfecting of the tissue of the scar is, again, a very slow process. It is often thought remarkable, that nerves and some of the higher tissues should require so long time for their repair; but scarcely less is necessary for the perfecting of a common scar. The principal changes by which it is accomplished include the removal of all the rudimental textures, the formation of elastic tissue, the improvement of the fibrous or fibro-cellular tissue, and of the new cuticle, till they are almost exactly like those of natural formation, and the gradual loosening of the scar, so that it may move easily on the adjacent parts.

All these changes are very slowly accomplished. One sees their effects, it may be, only after the many years in which, as it is said, the scars of childhood gradually wear out; *i. e.*, in which the new formed tissues gradually acquire the exact similitude of the old ones. Thus, the remains of the rudimental cellular tissue, imperfectly developed, may be found in apparently healthy scars of ten months' duration. After second operations, in which the scar of some former wound was removed, I have still found imperfectly developed granulation-cells in the tissue of the scar. Elastic tissue, also, I think, is not commonly formed in the first construction of a scar, but appears in it sometimes as much as twelve months after its first formation, and then gives it the common structure of the mixed fibro-cellular and elastic tissues which exist in the cutis.

But, an occurrence which may appear more singular than this is, in all good scars, as they are called, that gradual loosening of the tissue that at first unites the scar to all the adjacent parts. Thus, in such a wound as is made for tying a deep artery, or in lithotomy, at first, the new tissue, the tissue of the scar, extends down to the bottom of the wound, equally dense in all parts, and fastening the skin to the parts at the very deepest portion of the wound. But after a time this clears up. The tissue of the scar in the skin becomes more compact and more elastic; but that beneath it becomes looser and more like natural cellular tissue; and the morbid adhesions of one part to another are freed.

Now, in all this we may trace, I think, a visible illustration of the recovery from the minute changes of disease,—I mean, in this gradual return of tissues to the healthy state,—in the gradual approach of the new particles that are successively produced to a nearer conformity with the specific character of the parts they should replace, till repair becomes almost reproduction. And how can all this be reconciled with any theory of assimilation? How could assimilation alter the characters of a scar? or make one part of it assume one character, and another part a character quite different? so that at length, that which looked homogeneous as a mass of new-formed tissue, acquires, in separate parts, the characters of the several tissues in whose place it lies, and whose office it is destined, though defectively, to discharge.

LECTURE V.

Repair of Fractures—Differences between the process in man and that in lower animals. Absence of provisional callus in the repair of fractures in man. Evidence from cases of complete repair, and of repair in progress. Position of the reparative materials in fractures in the human subject. Probable reasons of the differences in the two processes.

Modes of Ossification of the reparative material. Natural modes of ossification; through cartilage and fibrous tissue. More numerous modes in the repair of fractures. Usual characters of the new bone, and its later changes. Arrest of the reparative process.

I shall not endeavour in the present lecture to treat fully of the Repair of Fractures. No one acquainted with the extent of the observations already made on this subject, and with the reputation of those who have been occupied with them, will blame me if I almost limit myself to the endeavour to explain only two or three points in the history of the repair of injured bones. The chief points that I have chosen are—first, the particulars in which the process of repair of fractures, observed in the human subject, deviates from that described from experiments upon lower animals; and secondly, the nature of the reparative material previous to its ossification.

On the first point, I must express my conviction that the description drawn by Dupuytren and others, from examinations of fractures in dogs, rabbits, birds, and other animals, cannot be applied without great deductions to the case of fractures in the human subject. True as the pictures are of the cases of the animals examined, they are exaggerations of the process in our own case. With a few exceptions, all that is written in these accounts of external and internal, provisional and definitive, callus, of the formations of cartilage and bone within the medullary tube and beneath the periosteum, can be traced only, as it were, in rudiment in the fractures of the human bones.

My impression of this was first obtained while describing the large collection of fractures for the catalogue of the museum of the college.

With the concurrence of Mr. Stanley, who had long held a similar opinion,* I then wrote—"There is scarcely a specimen in the museum of such a provisional callus formed in the repair of a fractured human bone; in nearly every case of such fracture, the material of repair, whether cartilage or bone, is only inlaid between the broken surfaces, or between the adjacent parts of the fragments, and unites them by being fixed to both. In favorable conditions this appears to be the usual mode of repair, even though the fragments of the broken bone be very much displaced."

"But the formation of a provisional callus, completely encircling the broken ends and adjacent parts of the fragments, is usual in the repair of fractures of the bones of other mammalia, and of birds. . . . . A similar but less perfect process is also shown in the accumulations of cartilage or bone which are often formed about fractures of the ribs, and of some other bones in the human subject, the fragments of which have not been held steady. It is probable, therefore, that the difference between the modes in which fractures are commonly united in man and other animals respectively, depends in part on the movement to which the fragments are subjected in

* Since the delivery of the lecture, Mr. Stanley has published his account of the Repair of Fractures in the descriptions of his beautiful 'Illustrations of the Diseases of the Bones,' p. 27.

the latter; but probably in part, also, on the greater readiness with which, under all circumstances, bone is formed in the animals lower than man."*

Since that was written, I have examined many more specimens, and find the same rule true; namely, that in the ordinary repairs of simple fractures in the human subject, the reparative material, or callus, is merely inlaid between the several fragments: it fills up the interspaces between them and the angles at which one fragment overhangs another; but it does not encircle or ensheath them, in the manner implied in the description of provisional callus; nor is it in any considerable quantity, if at all, deposited either beneath the periosteum or within the medullary tube. In birds, dogs, and other ordinary subjects of experiments, the formation of a provisional, or as it may perhaps be better called, an *ensheathing* callus, is usual. It is illustrated by numerous specimens on the table; yet even in animals it is not constant. To obtain what would be called good specimens of provisional callus, the injuries must be inflicted upon young animals, and among these I cannot but suspect that particular instances have been selected for description,—those in which less callus was formed having been put aside as imperfect instances of repair, though, in truth, they may have displayed the more natural process.

For fractures in the human subject, the evidence that union is accomplished by the reparative material being placed between, not within and around, the fragments—*i. e.* as an intermediate, not an unsheathing callus—this evidence may be obtained by the examinations of such fractures even long after they are completely healed. In as many as you like to examine you will find the new bone formed exclusively between the fragments. Whether they were in apposition, or nearly so, or wide apart, still there is no appearance of new bone being formed on the outer side of any fragment,—I mean on that side which is turned away from the other fragments. And this is the case even in those instances in which there is so much displacement of the fragments, and so much distortion, that we can hardly suppose the repair to have proceeded very quietly. Neither in any of these do you find new bone within the medullary tube. It may be objected by some to these specimens, that the fragments were once ensheathed and blocked up with callus, and that it has been since absorbed. But this is not probable, seeing that in many cases there remain, on the outer surfaces of the fragments, certain marks of their original form and slight irregularities. In one of the specimens which I present, we have traces of the healing of a long fissure, which appears now as a sunken groove, making it nearly certain that no new bone was formed over it. In another, is a detached piece of the wall of a femur turned quite round, so that its periosteal surface lies on the periosteal surface of the principal fragment; yet on the outer surface of this piece (which was the inner surface of its wall) the thin plates forming the boundary of the medullary tube are still unchanged.

But if any deem these and the like characters insufficient to prove the absence of unsheathing callus, and of callus extending into the medullary tube, yet recent specimens are not open to such doubts. I add, therefore, that (with the exceptions presently to be mentioned) in all the specimens of fracture that I have been able to examine, in the human subject, within six months of the time of the injury, there has been the same absence of provisional or unsheathing callus. The specimens here present are—a radius, four weeks after the fracture; another, four or five weeks; a tibia, five weeks; a femur, six weeks; another of the same date; a third, I should think, about

* Pathological Catalogue of the Museum of the College of Surgeons, vol. ii, p. 37.

eight or nine weeks; a radius, of somewhat later date; a tibia, eight weeks; a fibula, eleven weeks; a tibia, twelve weeks; and a tibia, sixteen weeks after the injury. Here are, also, others of various but unknown dates, all in process of apparently natural repair. All these were cases of simple fractures, and they include (with a few exceptions presently to be mentioned) all the specimens of such recent fractures, in the human subject, as are in the Museums of the College and of St. Bartholomew's Hospital. The displacements and other conditions following the injury have been manifestly various; but all agree in this,—that the fragments are united by intermediately placed reparative substance, and that this, whether soft or osseous, in no case surrounds or ensheaths the fragments, or does more than just close in the medullary canal. When present in the largest quantity, it is only enough to smooth off the chief irregularities, and to fill up the interspaces and the angles or corners, between the fragments.

Such, then, appears to be the natural mode in which the reparative material is deposited for the union of fractures of human bones. And, regarding the particular position which it may in each case occupy, I no not know that it can be more exactly described, than by saying, that it is deposited where it is most wanted for the strengthening of the bone,—so that, whatever would be the weak part of the bone, if unhealed, there is the new material placed, in quantity as well as in position just adapted to the exigencies of the case, and restoring, as much as may be, the original condition and capacities of the bone.

If now it be inquired why this difference should exist in the corresponding processes in man and other animals, I believe still that it must be ascribed principally to the two causes already quoted from the Catalogue—namely, the quietude in which fractures in our bones are maintained, and the naturally greater tendency to the production of new bone which animals always manifest. Even independently of surgery, in the case of fractures of the lower extremity, the human mode of progression almost compels a patient to take rest; and in fractures of the upper extremity, the circumstances of human life and society permit him to do so far more than other animals can. The whole process of repair is, therefore, more quietly conducted; and, as we may say, there is comparatively little need of the strength which the formation of provisional callus would give a broken limb.

The exceptions to the rule of difference in the repair of human bones and those of animals confirm it as thus explained; for the only bones in which, in the human subject, a provisional callus is generally or naturally formed, for the repair of fractures, are the ribs. In cases of fractured ribs one may see, indeed, a very close imitation of that which is described, from experiments on animals, as the ordinary mode of union. The provisional callus is well formed under the periosteum, and encircles, like a broad ring or ferrule, both the fragments, and may almost completely ossify before their union is accomplished, or even apparently begun.

Another bone for the repair of which, but more rarely, callus is formed around the fragments, is the clavicle; and the best specimen in which I have here seen it is one in which the fracture was not detected, and the fragments were allowed to move on one another, till the patient died twelve weeks after the injury.

Except in such cases as these of fractures not kept at rest, I doubt whether a natural formation of callus beneath the periosteum, or within the medullary tube of a human bone, would ever occur. In disease, the occurrence is not so rare; for, when the natural process of union fails altogether, the loose ends of the bones may be inclosed within a case formed wholly or in part of

bone; or an imitation of callus may be made by a gradual morbid accumulation of bone around a fracture, even after its natural union.

But I think the comparative restlessness of animals is not alone sufficient to account for all the difference in the processes. The remainder may be ascribed to their greater tendency, in all circumstances, to the formation of new bone. Not in fractures alone, but in necrosis, this is shown. It is very rarely that such quantities of new bone are formed in even children, as are commonly produced after necrosis of the shafts of bones in dogs or other animals; nor is there in the human subject any such filling up of the cavities from which superficial scquestra have been separated, as the experiments of Mr. Hunter showed, after such exfoliations from the metatarsal bones of asses.*

Other examples might be quoted; but these may suffice to show that, after injuries, new bone is formed more abundantly in animals than in man. And I hope enough has been said to prove that the generally received account of provisional callus, and other parts of the healing of fractures, is an exaggeration of what occurs in man. If it be asked what it is that is felt like a callus after fractures, I would say that, in such cases as I could examine after death, I have usually found that the overlapping ends of the bone, being both at once grasped, had been taken for the enlargement of callus. Sometimes, also, the thickening and induration of the parts around the fracture infiltrated with serous and bloody fluid, or with lymph, have been mistaken for it.

The next point on which I proposed to speak, concerned the structure of the reparative material thus deposited within the fragments. In reference to this, it seems essential that I should refer to those recent observations on the natural process of ossification, which have shown that bone is as commonly and as naturally formed through fibrous or membranous tissue as through cartilage.

Dr. Robert Nesbitt appears to have been the first who described the ossification of certain bones, especially those of the vault of the skull, as being effected in membrane. He did this, in 1731, in "two lectures, read in the Anatomical Theatre of the Surgeons of London;" for in these, which were afterwards published with the title 'Human Osteogeny,' he says, even in his title-page, that "the general notion, that all bones are formed from cartilages, is demonstrated to be a mistake."

His account of the difference between the ossification of the bones of the skull and that of the vertebræ, the pelvis, and the bones of the limbs, is so far accurate, that it appears strange it should not have directed subsequent inquirers much more than it did. But the distinction that he pointed out was, after his time, only occasionally insisted on;† and till very recently the opinion generally accepted was,—that the bones of the vault of the skull are formed by the ossification of cartilage, and that their development differs from that of the other bones only in this,—that there is no complete cartilaginous basis formed for each bone before ossification, but that cartilage is formed in the membranous coverings of the brain, just previous to the formation of the bone. Thus, *e.g.*, in the parietal or any of these bones in process of ossification, it was held that a thin border of cartilage might be always found projecting beyond the bone; and that at the same rate as this border ossified, so another, cartilaginous like it, would be formed in preparation for the next step of ossification; the formation of the cartilage only just keeping in advance of its ossification, till the formation of the whole bone

* Museum of the College, Nos. 641 to 653. † See Hildebrandt's Anatomie, i, 33.

was perfected. Such was the account given by E. H. Weber and Miescher, and adopted by Henle,* and, I believe, all anatomists of note.

But even while this opinion was gaining ground from observations in the mammalian fœtus, doubts of its truth were arising from examinations, instituted by Von Baer, into the construction of the primordial cartilaginous skulls of fish. These inquiries, begun in 1822, were, however, little regarded till, in 1835, Dugès published his researches on the 'Osteology of the Batrachia.' In these he showed that the skull of the naked, tailless amphibia is originally entirely cartilaginous; and that the bones of the perfect skull develope themselves in part from the cartilage of the fœtal skull, and in part on the exterior of that cartilage, in the perichondrium. Thus he gave strength to the opinion which Von Baer had entertained of the development of the skulls of fish, and directed the observations of many subsequent inquirers, especially of Vogt, Agassiz, Jacobson, and Rathke. I need not enter on the consideration of the various extensions into detail which these gave to the discovery of Von Baer. It may be sufficient for me to state, from an admirable memoir recently published on this subject by Kölliker,† that it is now proved "that in all vertebrata the bones of the skull are divisible into two categories: into primary bones, and secondary, overlying or tectile bones, of which the former proceed from the cartilaginous *primordial* skull, and are performed in cartilage; while the latter are formed outside the cartilage, from soft blastema between the cartilage and the skin."

The bones included in each category he enumerates; but, for my present purpose, it is perhaps of yet more interest to add, that by microscopic examinations Dr. Sharpey has not only fully confirmed these views respecting the ossification of the bones of the vault of the skull, but has added this important fact,—that the ossification by which the long bones increase in their circumference takes place, not in layers of cartilage successively formed beneath the periosteum, but in layers of fibrous substance: in short, that the peripheral growth of bones that are formed in the first instance by ossification of cartilage, is effected by ossification of membrane. In regard to the bones of the skull, observations similar to Dr. Sharpey's appear to have been made at nearly the same time by Spöndli and Kölliker; and in regard to the long bones, Kölliker has not only confirmed Dr. Sharpey's observations, but has more lately added that the same law holds for the vertebræ, the ribs, and in short, for all the other bones of the skeleton that are formed from cartilage, with the exception of the ossicula of the ear, which attain their full size in the cartilaginous state.

Thus, then, it will appear that the peripheral growth and ordinary maintenance of all bones, after the ossification of their primordial, and for a time growing, cartilage is completed, is effected by the ossification of membranous or fibrous tissue. I would call it fibrous rather than membranous, because in some instances, as the patella and other sesamoid bones, and in the union of fractures, and the growth of some tumours, a mass of tissue, rather than a membrane, ossifies.

Thus much of preface seemed necessary to explain the cases in which the material for the repair of fractures is transformed into bone through the development, not of cartilage, but of fibrous tissue.

What I have just said of the later growths of bones being accomplished by ossification of fibrous tissue, not of cartilage, might lead one to expect that all ossification for the repair of fractures, after the termination of the usual

* Allgemeine Anatomie, p. 831.

† In the Berichte vom zootomische Anstalt zu Wurzburg, p. 49.

period for ossification through cartilage, would be accomplished through the formation of a fibrous substance. But it is not so: rather, in the examination of many specimens, one finds the new bone formed in some through fibrous tissue, in some through cartilage, in some through fibro-cartilage, or a mixture of the two; and in yet further deviation from any single rule of development, the bone may be formed through either cartilage or fibrous tissue, in either a rudimental or a perfect state.

The changes that ensue directly after a simple fracture, are in accordance with what I have already described in relation to the general repair of injuries. A period of rest follows the injury; and for a week or ten days no change may be observed, at least in fractures in the adult long bones: and here at once is a point of contrast with the consequences of fracture in the lower animals; for these specimens,* showing the consequences of fracture of the tibia in rabbits six, ten, and fourteen days after the injury, prove that a perfect cartilaginous callus is in them formed in a shorter time than would elapse before the commencement of any distinct reparative process in man.

Especially, for contrast, one may notice the unchanged state of the periosteum round the broken human bones: for this, in ordinary cases, is neither raised by deposit beneath it, nor in any way altered—except, it may be, by slight thickening—during the whole healing of the fracture.

The first new material produced after simple fracture consists of the lymph and serum which are effused in consequence of the inflammation that the violence of the injury excites. But these, as in the repair of other subcutaneous injuries, are presently overwhelmed and enclosed (as the effused blood also is) by the more proper reparative material. How this is placed I have already said. In a plan, wherein one cannot overlook the evidences of particular design and of appropriate purpose, it is inlaid between the fragments wherever, when the limb comes to be used, the most new bone will be necessary for its strength. Thus, it may take the various forms of groins and buttresses, arches, beams, or bridges, according to the mode and degree of displacement of the fragments.

Thus placed, its development proceeds. I cannot tell the conditions which will determine in each case the route of development towards bone that the new material will take; nor whether the differences that may be observed are to be ascribed to the seat or nature of the injury, or to the condition of the patient. All these things have yet to be determined; and I believe that years of patient and well-directed investigation will be requisite for them. I can do little more than point out the modes in which the ossification may be accomplished.

And, first, it may be accomplished through perfect fibrous tissue. Thus I found it in a case of fracture of the lower part of the femur, and in a fracture of the radius; thus, too, I think, whatever new bone is formed after fractures of the skull is developed; and thus, too, one may find in the neighbourhood of fractures and other injuries of bone, ossifications of inter-osseous fibrous membranes, and of the tissue of the periosteum, or just external to it.†

But, secondly, the bone may be formed by ossification of the fibrous tissue in a rudimental state. And this rudimental state may be that of either nucleated cells or nucleated blastema. Through nucleated cells, as the embryo-forms of fibrous tissue, bone is formed when granulations or inflammatory effusions ossify. The process may be often seen in the union of

* Museum of the College, Nos. 418, 419, 420.

† The thin plate of bone which closes in the exposed medullary canal of the end of a fractured long bone, where one fragment overlaps another, will usually, I think, present a good example of ossification of fibrous tissue.

compound fractures, or of simple ones, when much inflammation has been excited; but, best of all, the ossification of nucleated cells in granulations may be observed when bone is formed in the mushroom-shaped mass of granulations that is protruded through the medullary canal of a bone sawn across in an amputation. In all these cases there appears to be a direct transformation into bone, without the intervention of either cartilage or perfect fibrous tissue.

The ossification of nucleated blastema, such as I have described as a rudimental form of fibrous tissue, may also be seen in simple fractures; and my impression is, that it is the ordinary mode of ossification in simple fractures of long bones that unite well and quickly. In such a case, in a fracture of the tibia, I found in long-continued examinations, that the bone is formed without any intermediate state of cartilage; a finely and very closely granular osseous deposit taking place in the blastema, and gradually accumulating so as to form the delicate yet dense lamellæ of fine cancellous tissue. The nuclei of the blastema appeared to be enclosed in the new-forming bone, and I thought I could trace that they became the bone-corpuscles; but I could not be sure of this, nor indeed could I, in either this or any other examination, satisfy myself that the origin of these corpuscles is in any structures previously existing in the soft or unossified tissue. Their first appearance in the forming new bone is too obscure, I think, to warrant any positive opinion; neither could I trace how the nucleated blastema, or other structure which is included within the new cancelli, is transformed into the later and more perfect medulla; only, one sees fatty matter gradually accumulating.

Such are instances of the ossifications, for the repair of fractures, that may be accomplished through fibrous tissue; and all these are possible without the intervention of the smallest portion of cartilage.

But perfect cartilage, with its characteristic homogeneous intercellular substance, and its well-formed cells, and all the characters of the purest fœtal cartilage, may be produced. Through the ossification of such cartilage, Miescher* and Veetsch,† and others, describe the repair of fractures as accomplished in dogs, pigeons, and other animals. I have not yet found the very same process in the human subject; but I should think it would occur in favorable instances of simple fractures in children. In youths and adults I have found only varieties of fibrous cartilage; but these have presented numerous gradations of structure, from the fibrous towards the perfect cartilaginous structure. In different specimens, or sometimes even in different parts of the same, the reparative material may display—in one, fibrous tissue, with a few imbedded corpuscles, like the large nearly rounded nuclei of cartilage cells; in another, a less appearance of fibrous structure, with more abundant nucleated cells, having all the characters of true cartilage cells; and in a third, a yet more nearly perfect cartilage. Through any of these structures, and apparently by the same method through all, the reparative new bone may be formed. It may be formed, first, where the reparative material is in contact with the old bone, and thence extending, it may seem as if it grew from the old bone; or it may be formed in the new material in detached centres of ossification, from which it may extend through the intervening tissues, and connect itself with the old bone.

The new bone, through whatever mode it be formed, appears to acquire quickly its proper microscopic characters. Its corpuscles, being first of simple round or oval shape, and then becoming jagged at their edges, subsequently acquire their canals, which appear to be gradually hollowed out in

* De Inflammations Ossium, 1836. † Die Heilung der Knochenbrüche, 1847.

the preformed bone as minute channels communicating with one or more of the corpuscles. The laminated canals for blood-vessels, I think, are later formed. At first, all the new bone forms a minutely cancellous structure, much like that of the fœtal bones in their first construction; but this gradually assimilates itself to the structure of the bones that it repairs, while its outer portions assume a compact laminated structure, and its inner or central portions acquire wider cancellous spaces and a more perfect medulla. But, in regard to many of these later changes in the bonds of union of fractures, there are so many varieties in adaptation to the peculiarities of the cases, that no general account of them can be rendered. Only, specimens and drawings, one and all, show the most striking evidences of design in the adaptation of the reparative process to the particular exigencies of each case; so that it might be said, with complete truth, of every instance, that whatever is necessary,—whatever may best, under the circumstances, repair the damage,—that is done.

Let me, in conclusion, remind you how this account of the ossification of fibrous tissue, in the repair of fractures, illustrates the most usual condition of fractures of which the repair is incomplete. They are united by ligament, —that is, by fibrous tissue: to the formation of this tissue the process goes on naturally, but at this point it is arrested; the fibrous tissue does not ossify, and its fibrous state, imperfect for the purpose of repair, is perpetuated.

LECTURE VI.

Repair of injuries of cartilage. Relation of cartilage and bone in the series of animal tissues.

Repair of tendons and muscles, divided in open and subcutaneous sections. Inflammatory effusion following the injury; effusion of reparative material; its organization and gradual perfection; its strength.

Repair of divided nerves: the primary and secondary conjunction of their fibres.

General considerations on the relations between the processes of repair and those of inflammation and development. Bearing of the facts observed in repair on the question of the constancy of specific characters.

My last lecture must necessarily be somewhat fragmentary, while I purpose to devote it to the consideration of the modes of healing of several different tissues,—modes which, although they be all consistent with what has been said of the general rules and methods of the healing process, yet present each some peculiarity that seems worthy of observation.

And first (though it matters little which I begin with), of the healing of wounds and other injuries of cartilage.

There are, I believe, no instances in which a lost portion of cartilage has been restored, or a wounded portion repaired, with new-formed permanent cartilage, in the human subject. When a fracture extends into a joint, one may observe that the articular cartilage remains for a long time unchanged, or else has only its broken edges a little softened and rounded off. At length the gap is filled with a rough fibrous tissue; or rather, the gap becomes somewhat wider and shallower, and the space thus formed is so filled up. Among the many experiments made by Dörner and others,* who cut and variously

* See Hildebrandt's Anatomie, Bd. i, p. 306.

injured the articular cartilages of dogs, none showed any sign of reproduction; and Mr. Skey has told me, that when, in experiments, he cut away portions of the cartilages of a dog's knee-joint, no repair of the cartilage ever appeared to ensue, though the joint did not materially suffer from the injury, and recovered its free capacity of motion.

Even in the smallest wounds of cartilage, the same union by fibrous tissue or ligament alone obtains, as a specimen here shows. A man, long before death, cut his throat, and the wound passed about half an inch into the angle of his thyroid cartilage. In the very narrow gap thus made—a gap not more than half a line in width—there is only a layer of tough fibrous tissue; and with the microscope I could detect no appearance of a renewed growth of cartilage. On the contrary, the edges of the cartilage, to which the fibrous tissue was attached, were as abrupt, as clean, and as straight as those would be of a section of cartilage just made with a very sharp instrument. The cut cartilage was unchanged, though the union between it and the new-formed fibrous tissue was as close and as firm as that of the several parts of a continuous tissue.

In some instances (but I suppose in none but those of cartilages which have a natural tendency to be ossified in advancing years), the fractures of cartilage are united by bone. This commonly happens in fractures of the costal cartilages (as the specimens show*); and it has been noticed in fractures of the thyroid cartilage. The union of a fracture of the cartilaginous portion of a rib is effected, as that of one in the osseous portion is, by an inclosing ring of bone, like a provisional callus; and the ossification extends to the parts of the cartilage immediately adjacent to the fracture.

The imperfect repair of cartilage contrasted with the perfect repair which bone, after similar injuries undergoes, may seem opposed to the general rule —that the more highly a tissue is developed, the less is its capacity for repairing the injuries it may sustain; for it is usual to speak of cartilage as being *developed* into bone, and to regard bone as the more developed and more highly organized of the two tissues. But I think it is only in a very limited sense that this mode of expression is just. In some admirable remarks† on the cartilaginous state of the endo-skeleton of Chondropterygian fishes, my colleague has said—"I know not why a flexible vascular animal substance should be supposed to be raised in the histological scale because it has become impregnated, and, as it were, petrified, by the abundant intussusception of earthy salts in its areolar tissue. It is perfectly intelligible that this accelerated progress to the inorganic state may be requisite for some special office of such calcified parts in the individual economy; but not, therefore, that it is an absolute elevation of such parts in the series of animal tissues." Now all that one sees of the life of cartilage, in the narrower survey of the higher mammalia, is conformable with this view, and would lead us to speak of its change into bone as a degeneration, rather than a development. The change is effected not only in the vigour of life, but as constantly, in certain parts, in its decay; and wherever it is effected, the part that has become bone ceases to grow, except by superaddition: the interstitial changes of normal nutrition are reduced to their lowest stage, or altogether cease. The cartilage, too, as I have said, is less frequently repaired after injury, and its repair is commonly effected by the production of bone; yet it is contrary to all analogy for a lower tissue to be repaired by the formation of a higher one. And it may be added that the granular, and in some instances even crystalline,

* Museum of St. Bartholomew's, Ser. iii, 48, 73.

† Owen; Lectures on Comparative Anatomy, vol. ii, p. 146.

form, in which the earthy matter of bone is deposited, is inconsistent with the supposition that its animal matter has acquired a higher development than it had before in the state of cartilage. So far, then, as its position in the series of animal tissues is concerned, bone should be placed below cartilage, as a tissue which has passed into a state of less active life, and has acquired characters that approximate it to the more lowly organized and to the inorganic substances. An osseous skeleton is, indeed, proper to the most highly developed state of the individual, and in this view bone appears superior to cartilage; but, with as much right, in the same view, the atrophied thymus gland, and the renal capsules almost arrested in their growth, might claim to be regarded as developments from their fœtal state; for these, also, are normal parts of the more perfect organism.

Healing of Tendons.—I have already often referred to the phenomena that follow the division of tendons by subcutaneous and by open wounds; but the practical interest of the subject will, I hope, justify my giving a connected account of the process, as I observed it, in a series of numerous experiments performed, with the help of Mr. Savory, on rabbits from three to six months old. Such experiments are, I know, open, in some measure, to the same objection as I made in the last lecture to those on fractures in the lower animals; but the few instances, in which examinations have been made of human tendons divided by subcutaneous section, have shown that the processes in man and in animals are not materially different. At the most, we may believe that, as in the repair of bones, the production of reparative material is more abundant, and its organization more speedy, in animals than in man.

I have already, in the second lecture, stated generally the differences in the several consequences of open and subcutaneous wounds. In the case of divided Achilles-tendons, the disadvantages of open wounds—*i. e.* of wounds extending through the integuments over and on each side of the tendon, as well as through it—were as follows:—1. There were always more inflammation in the neighbourhood of the wound, and more copious infiltration of the parts, than in a subcutaneous division of the tendon in the same rabbit. 2. Suppuration frequently occurred, either between the retracted ends of the divided tendon or beneath its distal end. 3. The skin was more apt to become adherent to the tendon, and so to limit and hinder its sliding movements when the healing was completed. 4. The retracted ends of the tendon were more often displaced, so that their axes did not exactly correspond with each other, or with that of the reparative bond of union.

Such mishaps were often observed in the open wounds, but were rare after the subcutaneous operations. In the cases of open wounds, they were avoided as often as the wound through the integuments healed quickly; and, whenever this happened, the case proceeded like one in which the subcutaneous division had been made. It was evident that the exposure of the wounded parts to the air did little harm, if it was continued for only a few hours,—a fact which may be usefully remembered when operations must be performed on tendons which it is not convenient to divide unseen.

These same cases of speedy healing of the opening in the integuments served to show, that it is unimportant for the healing of divided Achilles-tendons, whether the cellular sheath or covering of the tendon be divided or not. In all the cases of open division in these experiments, it was completely cut through; yet, when the external wound healed quickly, the union of the divided tendon was as speedy and as complete as in any case of sub-

cutaneous division in which it might be supposed that the sheath of the tendon was not injured.

I will describe now the course of events after subcutaneous division of the Achilles-tendon; stating only what was generally observed, and what the specimens and diagrams before me will serve to illustrate.

At the instant of the division, the ends of the tendon separate to a distance of nearly an inch, the upper portion of the tendon being drawn up the leg by the action of the gastrocnemius and soleus muscles. The retraction is comparatively much greater than in operations on the human Achilles-tendon; for where these are done, the muscles are seldom capable of strong or extensive contraction. It is in all cases to be remembered, that the separation is effected entirely by the withdrawal of the upper portion of the tendon: the lower, being not connected with muscle, remains with its end opposite the wound. To this we may ascribe the general fact, that the reparative process is more active at the upper than at the lower portion of the tendon: for the latter lies in the very centre of the chief inflammatory action; while the former is removed far from it, being drawn away, at once from the seat of the injury, and from even the slightest exposure to the air.

I have already said that very little blood is effused in the subcutaneous operations. The first apparent consequence of the division of the tendon is the effusion of a fluid or semi-fluid substance, which, like the product of common inflammation, quickly organizes itself into the well-known forms of exudation-cells,—forms nearly like those of the white corpuscles of the blood and the granulation-cells. These, speedily becoming more distinctly nucleated and elongated, undergo the changes which I mentioned in describing the development of granulations. The effusion makes the tissues at and near the wound succulent and yellow, like parts infiltrated in anasarca. Together with the enlargement of their vessels, it swells the parts, so that the skin is scarcely at all depressed between the separated ends of the tendon. But in well-made subcutaneous sections, this inflammatory effusion is of small amount, and takes, I believe, little or no share in the healing of the injury; for the effusion ceases after the first twenty-four hours, and I think that its cells are not developed beyond the state in which they appear spindle-shaped. I have never seen indications of their forming filaments of cellular or fibrous tissue.

In rabbits, forty-eight hours usually elapse before there are distinct signs of the production of the proper reparative material. This is deposited in the fibro-cellular tissue that lies between and close round the separated ends of the tendon, as well as in the interspaces of the tendinous fasciculi of those ends. It thus swells up the space between the separated ends, and makes the ends themselves somewhat soft and succulent. Some portion, at least, of it being deposited where the inflammatory effusion was, one finds their constituents mingled; but I believe that, while the proper reparative material developes itself, the product of the inflammation is either arrested in its development, or even degenerates,—its cells shrivelling up, and gradually wasting.

I need not now describe the mode of development of the reparative material provided for divided tendons; for I have taken it as a typical example of the development of lymph into nucleated blastema, and thence into fibrous tissue. To the naked eye, it appears after three days as a soft, moist, and grayish substance, with a slight ruddy tinge, accidentally more or less blotched with blood, extending from one end of the tendon to the other, but having no well-marked boundary—undefined, merging gradually into the sur-

rounding parts. In its gradual progress, the reparative material becomes commensurately firmer, tougher, and grayer, the ruddiness successively disappearing from the circumference to the axis; it becomes, also, more defined from the surrounding parts, and after four or five days forms a distinct cord-like vascular bond of connection between the ends of the tendon, extending through all the space from which they have been retracted, and for a short distance ensheathing them both.

As the bond of connection thus acquires toughness and definition, so the tissue around it loses its infiltrated and vascular appearance; the inflammatory effusion clearing up, and the integuments becoming looser, and sliding more easily. In every experiment, one finds cause for admiration at the manner in which a single well-designed and cord-like bond of union is thus gradually formed, where at first there had been an uniform and seemingly purposeless infiltration of the whole space left by the retraction of the tendon.

With the increase of toughness, the new substance acquires a more decidedly filamentous appearance and structure; so that after the seventh or eighth day the microscope detects well-marked filaments, like those of the less perfect forms of fibrous tissue. Gradually perfecting itself, but with a rate of progress which becomes gradually less, the new tissue may become at last, in all appearance, identical with that of the original tendon. So it has happened in these valuable specimens presented to the Museum of the College by Mr. Tamplin. They are the Achilles-tendon, and the tendons of the anterior and posterior tibial muscles of a child nine months old, in whom, when it was five months old, all these tendons were divided for the cure of congenital varus. The child had perfect use of its feet after the operation; and when it died, no trace of the division of any of the tendons could be discerned, even with microscopic aid.

Such a perfect repair as this is, however, I believe, exceedingly rare. More commonly the differences between the original tendon and the new substance remain well-marked; the latter does not acquire the uniform arrangement of fibres, or the peculiar glistening thence accruing to the normal tendons; it is harder, and less pliant, though not tougher; its fibres appear irregularly interwoven and entangled, dull-white, like those of a common scar. And these differences, though as time passes they become gradually less, are particularly well seen when a longitudinal section is made from behind through both the ends of the tendon and the new substance that ensheaths and connects them. In such a section, one sees each of the retracted ends of the divided tendon preserving nearly all its peculiar whiteness, only somewhat rounded or misshapen and swollen, and imbedded in the end of the new substance, which is always grayer, or less glistening, and looks less compact and regular. In the retracted ends of the tendon, one may discern the new substance mingled with the old, and interposed between its fasciculi, with which one may believe it is connected by the finest dove-tailing.

The strength, both of the new substance itself, and of its connection with the original substance, is worthy of remark. To test it, I removed from a rabbit an Achilles-tendon, which had been divided six days previously, and of which the retracted ends were connected by a bond of the size and texture usual at that period of the reparative process. I suspended from the half section of this bond gradually increased weights. At length it bore a weight of ten pounds, but presently gave way with it; yet we may suppose the whole thickness of the bond would have borne twenty pounds. In another experiment, I tried the strength of a bond of connection which had been ten days forming: this, after bearing suspended weights of twenty, thirty, forty, and fifty pounds, was torn with fifty-six pounds. But surely the strength it showed

was very wonderful, when we remember that it was not more than two lines in its chief diameter; and that it was wholly formed and organized in ten days, in the leg of a rabbit scarcely more than a pound in weight. With its tenacity, it had acquired much of the inextensible character of the natural tendon: it was indeed stretched by the heavy weights suspended from it, yet so slightly that I think no exertion of which the rabbit was capable would have sufficed to extend it in any appreciable degree.

The Healing of Muscles subcutaneously divided presents many things exactly similar to those just described as observed in the healing of tendons similarly divided. But in the experiments which I have made on the triceps extensor brachii, and the tibialis anticus of rabbits, there was always observed a peculiar inversion, subsidence, or *tucking-in* of the muscular fibres at the divided part, so that nearly all the fasciculi directed their cut ends towards the subjacent bone or fascia. Thus it might, and sometimes appeared to, happen that, though the retracted portions of the muscle were imperfectly united, yet the action of the muscle was not lost, for one or both its ends acquiring new attachments to the subjacent parts would still act, though with diminished range, upon the joint over which the continued fibres of the muscle passed.

In general, it appeared that the reparative material was less quickly produced than after division of the tendons; but this might be because of the greater violence inflicted in the operation, more than because of the structure of the divided parts. The usual method and end of the development of the reparative material were the same as after division of the tendons; and at length—but always, I think, more slowly than with them—the ends of the retracted portions became inclosed in a tough fibrous bond of union.

After the formation of this bond, the healing of divided muscles is improved, both by the clearing up of the surrounding tissues infiltrated with inflammatory products, and by the contraction of the new bond, which thus draws together the retracted portions of the muscle, so that they may nearly coalesce. Thus, in a man who had cut his throat long before his death, and had divided the left sterno-hyoid, omo-hyoid, and sterno-thyroid muscles, I found that the ends of these muscles, though they must at first have retracted considerably, had all been drawn to attachments on the cricoid cartilage, over which their several portions nearly united.

The *Healing of divided Nerves* presents, in ordinary cases, many features in common with that of divided tendons. A bond of new substance is formed, which connects the retracted portions. In this bond, which has in the first instance only the characters of the material constructed for the repair of all soft parts, there are gradually formed new nerve-fibres, which connect themselves with the old ones in the separated portions of the divided nerve, and thus restore its function. I shall not dwell on this process, for I have made no new observations on it: it is amply treated in several works on physiology;* and it is thoroughly illustrated, so far as the appearances to the naked eye are concerned, by the valuable series of preparations given to the Museum of the College by Mr. Swan, and by the collection of drawings from Guy's Hospital, which Mr. Hilton has kindly lent for your examination.

Leaving, then, this process, which might be named the *secondary* repair of divided nerves, I will speak of one which, so far as I know, has not been yet described, and which may be justly called the *primary* healing. It may be explained by the history of a case in which it occurred:

A boy, eleven years old, was admitted into St. Bartholomew's Hospital, under Mr. Stanley, with a wound across the wrist. This wound, which had

* See especially Müller's Physiology, by Baly, i, 457; Valentin's Physiologie, i, 702.

been just previously made with a circular saw, extended from one margin to the other of the fore-arm, about an inch above the wrist-joint. It went through all the flexor tendons of the fingers and thumb, dividing the radial artery and nerve, the median nerve and artery, and extending for a short distance into the radius itself. The ulnar nerve and artery were not injured; the condition of the interosscous artery was uncertain, but the interrosseous ligament was exposed at the bottom of the wound. Half an inch of the upper portion of the divided median nerve lay exposed in the wound, and was distinctly observed, and touched by Mr. Stanley, myself, and others. All sensation in the parts supplied from the radial and median nerves below the wound was completely lost directly, and for some days after the injury.

It was decided to try to save the boy's hand. The radial artery was tied, and the edges of the wounded integuments put together. No particular pains were taken to hold the ends of the divided median nerve in contact, but the arm was kept at rest with water-dressing.

After ten days or a fortnight, the boy began to observe signs of returning sensation in the parts supplied by the median nerve, and these increasing, I found, on the 26th of February, and on many subsequent days, that the nerve had nearly recovered its conducting power. When he was blindfolded, he could distinctly discern the contact of the point of a pencil with his second finger, and the radial side of his third finger; he was less sure when his thumb or his fore-finger was touched, for, though generally right, he sometimes thought one of these was touched when the contact was with the other; and there were a few and distant small portions of the skin supplied by the median nerve from which he still derived no sensation at all.

Now all this proves that the ends of the divided median nerve had coalesced by immediate union, or by primary adhesion with an exceedingly small amount of new substance formed between them. In the ordinary secondary healing of divided human nerves, twelve months generally elapse before, if ever, any restoration of the function is observed; in this case, the nerve could conduct in a fortnight, and perhaps much less, after the wound. The imperfection of its recovery is just what one might expect in such a mode of union. One might anticipate that some of the fibres in one of its portions would fail to be united to any in the other portion: the part supplied by these filaments would necessarily remain insensible. So, again, one might expect that some of the fibres in one portion would unite with some in the other, with which before they were not continuous, and which supplied parts alien from those to which themselves were destined: in all such dislocations of filaments, there would be confused or transferred sensations. But, among all the fibres, some would again combine in the same continuity in which they had naturally existed: and in these cases the function would be at once fully restored.

While this case was under observation, Mr. Gatty, a pupil of the hospital, told me a similar case in which his father had been consulted; and that gentleman kindly sent me, with the permission of Mr. Heygate, in whose practice the case occurred, the following particulars of it:

A lad, near Market Harborough, thirteen years old, had his hand nearly cut off at the wrist-joint by the knife of a chaff-cutting machine. The knife passed through the joint, separating a small portion of the ends of the radius and of the ulna, and leaving the hand attached to the fore-arm by only a portion of integument about an inch wide; connected with which were the ulnar vessels and nerve, and the flexor carpi ulnaris muscle—all uninjured. The radial artery and some small branches being tied, the hand and arm were brought into apposition, and after removing a small portion of extensor tendon that protruded, were retained firmly with adhesive plaster and a splint of paste-

board. The wound went on very well, and was left undisturbed for a week. The warmth of the hand returned; in ten or twelve days after the injury there was slight sensation in the fingers, but in the thumb none was discernible till more than a fortnight had elapsed. Finally the sensation of the hand and fingers, and most of their movements, were perfectly restored.

In this case, again, it seems impossible to explain the speedy restoration of the conducting power of the nerve, except on the supposition that its divided fibres had immediately reunited. We have no evidence that new nerve-fibres could in so short a time be formed: all the cases of less favorable healing show that they require a year or more for their formation.

I need hardly add the practical rule we may draw from these cases. It is, briefly, that we may, with good hope of great advantage, always endeavour to bring into contact, and immediately unite, the ends of divided nerves; and that we must not in all such cases anticipate a long-continued suspension of the sensation and other nerve-functions of the part.

Time will not allow me to speak of the healing of injuries of other tissues than these; for I wish to devote the remainder of the hour to the consideration of some of the relations which the reparative process bears to those of inflammation, and to illustrate, with more pointed instances than I could refer to in the first lecture, the evidences of identity of the power exercised in the repair of injuries and in the development of the germ.

It is not because we have any well-defined idea of inflammation that it is desirable to refer to it, as if it were a standard with which we might compare other organic processes; but because some idea of inflammation, however vague, mingles itself with nearly everything that is considered in surgical pathology. Nowhere is this more manifest than in what has been written in surgical works upon the methods of repair; concerning which the general impression seems still to be, that a process of inflammation forms part of the organic acts by which even the smallest instance of repair is accomplished.

Now to judge whether, in any process of repair, an inflammation of the wounded part ensues, we have two kinds of evidence: namely, that which is derived from the presence or absence of the usually-admitted signs of inflammation during life, and that which may be found in the presence or absence of inflammatory products, *i. e.* exudation-cells, after death. Each of these has its advantages; but in experimental inquiries, the latter is by far the better evidence, and that which I have chiefly sought. Judging, however, as much as possible from both these forms of evidence, the processes we have traced appear to warrant these general conclusions:

1. That in the healing of a wound by immediate union, inflammation forms no necessary part of the process; rather, that its presence always hinders, and may completely prevent it. The healing by immediate union should be a simple re-joining of the severed parts, without the production of any new material; and in the same proportion as, in any case, inflammatory matter is effused, either in or between the wounded parts, in that proportion does the healing deviate from the true and best process of immediate union.

2. For subcutaneous wounds and injuries, as in divided tendons, simple fractures, and the like, nearly the same may be said. Inflammation is excited by the local injury, but its products form no necessary part of the material of repair; rather, the more abundant they are, the more acute the inflammation is, and the longer it continues, the less speedy and the less perfect is the process of repair. For here the necessary or best reparative material is a substance which, both in its origin and its development, declares its non-inflammatory nature; a substance which is produced without the signs of co-existent inflammation, and of which the development is different from that

of the true inflammatory products. And this, which is most evident in the case of the healing of subcutaneous injuries by bonds of connection, is probably equally true in the case of subcutaneous granulations.

But, 3dly, in the healing of a wound by primary adhesion, or by open granulations, we have evidence of a process of inflammation, not only in the presence of its ordinary signs in a degree generally proportioned to the severity and extent of the injury, but in the character and mode of development of the new materials that are formed for the repair. For these materials are, in all appearance, identical with those of such effusions of lymph as all are agreed to consider the effects of inflammation.

Still, 4thly, in these cases we have evidences that the inflammatory process is necessary for no more than the production of the organizable matter,—and, in the case of granulations, for the production of only the first portions of it. The right formation of the cells, and, yet more evidently, their higher organization into cellular tissue and cartilage, ensue only while the signs of inflammation are absent. They are manifestly hindered or prevented when signs of inflammation are distinctly present, or when its existence may be suspected in consequence of the presence of some irritation, as a foreign body, dead bone, or the like. The continuance of suppuration during the process of healing is no proof of the continuance of inflammation, if the account that I have given of pus be true.

In these modes of healing, therefore, we may conclude that inflammation is only partially, and at one period requisite; and that, in regard to its requisite degree, the least amount with which an effusion of lymph is possible, is that which is most favorable to repair.

Lastly, for the process of healing by scabbing, the absence of inflammation appears to be essential: indeed, the liability of our own tissues to the inflammatory process, and to the continued effusion that it produces, appears to be that which prevents their injuries from being healed as easily and surely, by the scabbing process, as nearly all open wounds are in animals.

Such may be regarded as the relations of the reparative process to that of inflammation, as it is commonly understood; but, I repeat, such a comparison can be made only for the sake of deference to the general state of opinion in matters of surgical pathology. In truth, we know less of inflammation than of the reparative process.

But, admitting the share which inflammation has in the repair of injuries to be such as I have expressed, it appears necessary to consider next how such a process can be made to minister to repair;—what is the power that determines its results to be such, or of such a kind, as are required for the restoration of the perfection of the injured part? The mere act of inflammation in a part would not heal its wounds: it would only produce a material which might be developed into cellular tissue and cuticle, and in which blood-vessels might be formed. Some other power must inform the course of the inflammation, and determine its result towards the healing of the wound. And so with all the other special acts of which each process of repair consists; whether we assume the operation of an assimilative force, or detect germs of tissues, or productive cells, which we may regard as centres of power,—still we must admit, I think, that the reparative process is determined in every act according to the same law, and by the same powers, as those which actuated the development of the germ. For in the repairs of even the highest animals we may discern all those features which I enumerated as characteristic of the power of the germ, and as distinguishing it from any force of assimilation, or any other force assumed in the explanations of the maintenance of the body by nutrition.

Thus, 1st, the material for the repair of an injury is constructed according to no present model, such as is assumed for the hypothesis of assimilative force: it is developed from no tissue-germ left by the damaged part for the construction of its successor.

In the repair of a divided tendon, the whole length of the connecting bond is developed equally; or, if there be a difference, it is that the mid-space is in advance of the rest. No assimilative force in the ends of the original tendon can be imagined thus equally diffused, nor could germs for the growth of tendon have been strewn along the space left by the retraction. So, in the repair of fractures, the new bone is commonly formed first in contact with the original shaft, as if it were an out-growth from it; and here the assimilative force may have effect: but it is also often formed in detached parts, even outside the periosteum, at such distance from the old bone, and with such intervening tissue, that no act of an assimilative force can be reasonably imagined sufficient for the result.

What, then, can determine such a reconstruction of parts as this? Surely nothing but such a power as that which determined their original construction from the germ.

The identity of the power is, in the 2d place, manifested by its mode of operation. Whatever be the structure to be reproduced, it is constructed through the same stages as were traversed in its first development. Witness the cases that I have referred to: in the two modes of development of fibro-cellular tissue for repair, both equally imitations of a natural development, —in the two modes of the reproduction of new bone, both alike repetitions of the natural development of bone, in the mode of development of vascular loops, and of the walls of the blood-vessels. So, that, various as are the conditions in which we watch the process of repair, and various as the degrees of its perfection, yet is there no real variety of plan—no deviation from conformity with the law according to which the new structures are developed in the germ.

Observe, 3dly, how, as in the germ, many independent developments concur to the attainment of the end. In the several layers of granulation-cells, while one portion are forming themselves to cellular tissue, another are constructing cuticle, and others are permitting and concurring in the progress of new blood-vessels. Or, in a wound involving many different tissues, we may discern the material that unites each of them gradually assuming more of the characters of that which it unites, or that its position needs.

4thly, the limits by which the reparative process is bounded are the same as those to which the development of the germ was confined. Great as the activity of the process may be in some instances, yet does it never achieve more than the power of the germ did. Trembley's hydra multiplied by mutilation fifty-fold: but the force thus manifested could not have been made to develope that hydra into any higher specific form, nor even, by expenditure in growth, to have formed from it an hydra of fifty times the usual dimensions. And so, in the repair of higher organisms, we find perfect tendon, perfect bone, perfect nerve, and of these just so much as is needed to restore perfection; but, except in disease, the reparative process never, in either the quantity or the quality of that which it produces, goes beyond the point to which the germ-power had developed the same part.

Lastly, the acts of the reparative process are in conformity with the conditions and the gradually-changing modes of action of the germ which we observe in advancing years. A part which is injured in the child is repaired with tissue proper to the childish state; the same part injured in the old man is repaired with some lower tissue, or with tissue like that which is natural to age.

Whether, then, we regard the exact details of the method according to which the reparative process is accomplished, or the end that it achieves, or the limits within which both its methods and its end are confined, we see alike the evidences that the power that actuates it is the same as that which actuated the development of the germ. In every impregnated germ, we must admit that properties are implanted, which, in favorable conditions, issue in the power to form, of the germ and the materials it appropriates, a being like those from which it sprang. And mysterious as it may seem, yet must we conclude, that a measure of those properties is communicated to all the organic materials that come within the influence of the germ; so that they, being previously indifferent, form themselves in accordance with the same specific law as that to which the original materials of the germ are subject. So, through every period of life, the same properties transmitted and diffused through the whole organism, are manifested in the determination of its growth and maintenance, in its natural degeneration, and its repair of every part, in accordance with that type or law which has prevailed in every individual of the species.

Thus the constancy of both the method and the end of the reparative process may confirm us in the belief of the essentiality, we may almost say the immutability, of specific characters. For it shows that with each of all the countless varieties of visible form and structure, which mark the specific characters of living beings, there correspond peculiar internal properties of its constituent matter—properties which are capable of transmission and communication to all that can be incorporated in the living body, and of accumulation in the form of germs; and which, in any way thus transmitted, can manifest themselves in the unchanging power of constructing and composing matter according to the one determined and specific type.

Thus, by watching the life of any being, in all the varieties of external circumstance and accident, and by seeing that, whatever be the deviation from its perfection into which, by the force of these, it is for a time compelled, it yet reverts to the same specific form,—or, if it fall short of it, assumes no lower one: by watching such a life, we discern an image of the constancy of the law of specific characters; we gain an assurance that matter was not, and is not now, cast without design into the world, to be shaped by the force of chance and circumstance, and to be raised or degraded by their various ebb and flow; that the living occupants of the world have been fashioned and adapted for it, not by it; and that each was from the first endowed with properties that might descend unchanged from one generation to another, and in their immutability might be a symbol of Him who at the first created them, and by whose unchanging Will and Power they have been ever since maintained and still subsist.

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1. On the Pathology of the Kidney in Scarlatina, illustrated by Cases. By James Miller, M.D. London, Churchill, pp. 117.

2. Transactions of the American Medical Association. Vol. 2, pp. 950.

*** *The high character attained by the first volume of these transactions is fully maintained in the present. The reports are full and sufficiently diverse in their object to interest a numerous class of readers.*

3. Duties and qualifications of Physicians. By Dr. Ware.

*** *A little book full of honorable and Christian aspirations. Were all physicians fully imbued with its principles, the profession would indeed realize the classic encomium*—"Homo in nulla re ad Deos proprius accedit quam in hominibus solatium dando."

4. On Stammering, and its treatment. By Baccalaureus Medicus Oxoniensis. London.

5. Surgical Anatomy of the Arteries and descriptive Anatomy of the Heart. By the late Valentine Flood. New edition, by John H. Power, M.D. Dublin, 1849.

*** *The early edition of this manual being well known, we need only state, that, in the present form, the volume is enhanced in value. It will form an excellent addenda to the student's library.*

6. Treatment of Secondary Syphilis by a safe and successful method. By Langston Parker, Surgeon to the Queen's Hospital, Birmingham. Churchill, pp. 112.

7. On Diseases of Menstruation and Ovarian Inflammation. By Edward John Tilt, M.D. Churchill, pp. 248.

8. Pathological Researches on Death from Syncope and Suffocation, and on Vital and Post-mortem Burning. By Samuel Wright, M.D. Churchill.

*** *This important addition to forensic medicine will be noticed in our next Report in that department. In the meantime we commend it to the perusal of every practitioner.*

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10. On the Operation of Strangulated Hernia. By Henry Hancock, F.R.C.S. London, 8vo, pp. 95.

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12. Transactions of the Pathological Society of London. Vol. 1.

13. Essay on Intestinal Auscultation. By Dr. Charles Horner. (Reprint.)

14. Portraits of Diseases of the Skin. Fasciculi 6 and 7.

15. Pathology of the Human Eye. By John Dalrymple, Esq. Fasiculi 2, 4, 5.

16. Surgical Anatomy. By J. Maclise, Surgeon. Fasciculi 3, 4, 5, 6.

*** *In thanking Mr. Churchill for these splendid specimens of pictorial printing, we can only repeat that they have never been surpassed, or, that we know, equalled by any preceding attempts of the same nature. The first two in particular must long remain unrivalled.*

17. Second Report of the Somerset Lunatic Asylum. 1849.

18. Report of the Bloomingdale Lunatic Asylum. 1849.

19. The causes, symptoms, and treatment of Eccentric Nervous Affections.

20. Unity of Nature. By Charles Bland Ratcliffe, M.B. Churchill, 8vo, pp. 150.

*** *A work replete with cultivated thought and profound reasoning. The bibliolater may at first sight be startled at some of the doctrines which it expounds; but reflection will demonstrate that a man may be thoroughly imbued with science, without losing the attributes of the humble Christian.*

21. An inquiry of How far Consumption is curable, &c. By James Turnbull, M.D. Churchill, 8vo, pp. 104.

*** *A reprint, with additions of a paper originally published in the London Journal of Medicine, &c., alluded to in the Report on Practical Medicine in our present volume.*

22. The adaptation of the Eye to distances. By W. Clay Wallace, M.D. New York, Wiley, pp. 36.

*** *A reprint of lectures which have already appeared in several Journals.*

23. Practical Handbook of Medical Chemistry. By John E. Bowman. Churchill, pp. 252.

*** *This little book, designed for the use of his pupils, is an admirable compilation, and one calculated to be of great use to the practitioner equally with the tyro. It will form a worthy adjunct to the works of Prout, Golding Bird, Rees, Vogel, and others, and should be on the library-table of every real* student *of disease.*

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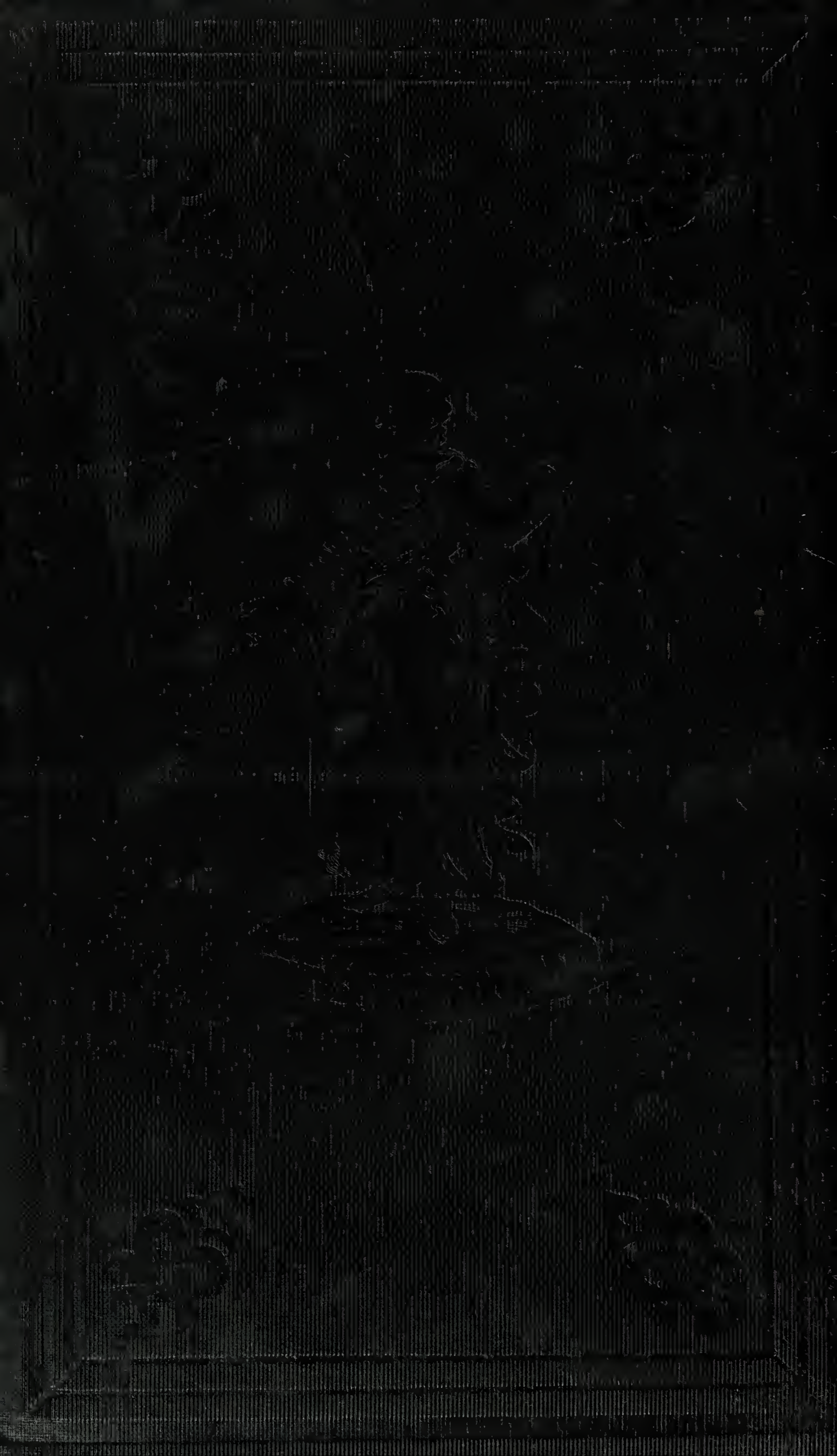
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